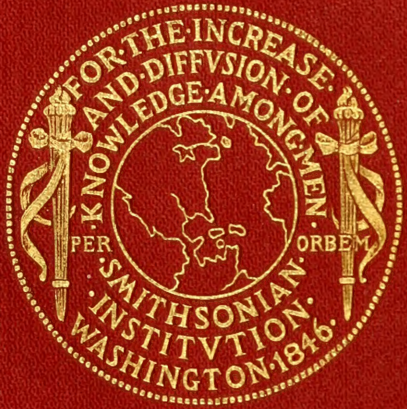
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BULLETIN 28

MEXICAN AND CENTRAL AMERICAN ANTIQUITIES, CALENDAR SYSTEMS, AND HISTORY

TWENTY-FOUR PAPERS BY

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TRANSLATED FROM THE GERMAN UNDER THE SUPERVISION OF

CHARLES P. BOWDITCH

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INTRODUCTION

For a number of years English-speaking students of aboriginal American history have given much attention to the archeology and especially to the glyphic writing of the semicivilized peoples of middle America. Researches relating to the latter subject are of exceptional importance, not only because of their bearing on native history, but on account of their application to the problems of the origin and development of writing in general. Investigations regarding the American glyphic system have been greatly stimulated in recent years by kindred researches in various parts of the world, and more especially by the remarkable results achieved by Egyptologists, who, through the discovery of the Rosetta stone, have been able to present to the world historic treasures of the greatest value. Although there is no prospect that an American "Rosetta stone" will be found, since only one well-advanced system of writing had developed in the New World, the present investigations along this line are well worth the attention of the American Government.

Among the scholars engaged in the study of the native American writing is Mr Charles P. Bowditch, of Boston, who is earnestly seeking to promote researches in this direction. He found that American students who essayed to enter this field were greatly embarrassed by the fact that much of the literature bearing on the subject was published in foreign languages, and often in forms that placed it beyond their reach. Access to this literature is essential to the success of English-speaking students of the glyphs, and Mr Bowditch resolved to undertake the translation and publication of a number of the more important papers. He advised with Major Powell with respect to publication, and it was arranged that the translations, when completed, should be brought out by the Bureau of American Ethnology. The manuscript translations were furnished in 1900, but were not edited or finally presented for publication until 1903. They are now issued in the present bulletin, without modification, save that the illustrations are somewhat differently assembled. It is considered advisable to present the papers as nearly in their original form as translations permit, in order to faithfully record the state of the researches at the period of their original publication.

The translations were made, under the direction and at the expense of Mr Bowditch, by Miss Selma Wesselhoeft, with the assistance of Miss A. M. Parker. Supervision of the publication was entrusted to Dr Cyrus Thomas, of the Bureau, whose familiarity with the archeology and especially with the glyphic writing of middle America has been of much value in the revision of the proofs.

Dr Eduard Seler, author of a number of papers herein republished, was engaged in exploration in Central America and Mexico while his memoirs were being put in type, hence it was not possible to submit the proofs to him at the time. Having returned recently to Berlin, however, Doctor Seler, has prepared brief notes and has made necessary corrections and important additions. These appear at the close of the volume.

In 1886 the Director of the Bureau was authorized to begin the publication of a series of bulletins in octavo form and in paper covers, designed for the expeditious printing of minor papers relating to American ethnology. Between 1886 and 1900 twenty-four bulletins appeared, and in 1900 provision was made for the publication of succeeding numbers in large octavo form, and uniform in binding with the annual reports. Nos. 25, 26, and 27 were issued in this style. In 1903, in the interest of economy, Congress authorized the return to the octavo form, in which the present number is issued.

THE MEXICAN CHRONOLOGY

WITH SPECIAL REFERENCE TO THE ZAPOTEC CALENDAR

BY

EDUARD SELER

THE MEXICAN CHRONOLOGY

WITH SPECIAL REFERENCE TO THE ZAPOTEC CALENDAR[a]

By Eduard Seler

The peculiarities of the system of chronology in use among the various civilized nations of ancient Mexico and as far as Nicaragua are well known. We know that it was based on a period of 20 days, which were known by the names of various tangible objects, half of them the names of animals, and which were hieroglyphically designated by pictures of these animals or objects. Twenty signs were taken on account of the vigesimal system of numeration, which all these races used. The calculation of the days, however, at least in the prevailing chronology, was not carried on according to this vigesimal system, but the numerals 1 to 13 were combined with these twenty signs, so that each of the successive days was distinguished by a sign and a numeral in such a way that when the numeral 1, combined with the first sign, served to designate the first day, the fourteenth day took the fourteenth sign, but with the numeral 1 again. Thus, a period of 13 × 20, or 260, days was obtained as a higher chronologic unit. For only after the lapse of this period of time did a day again obtain the same numeral and the same sign.

In the following table (Table I) the twenty signs are designated by Roman, the thirteen numerals by Arabic, numerals.

Table I (first half)

1	I	8	I	2	I	9	I	3	I	10	I	4	I
2	II	9	II	3	II	10	II	4	II	11	II	5	II
3	III	10	III	4	III	11	III	5	III	12	III	6	III
4	IV	11	IV	5	IV	12	IV	6	IV	13	IV	7	IV
5	V	12	V	6	V	13	V	7	V	1	V	8	V
6	VI	13	VI	7	VI	1	VI	8	VI	2	VI	9	VI
7	VII	1	VII	8	VII	2	VII	9	VII	3	VII	10	VII
8	VIII	2	VIII	9	VIII	3	VIII	10	VIII	4	VIII	11	VIII
9	IX	3	IX	10	IX	4	IX	11	IX	5	IX	12	IX
10	X	4	X	11	X	5	X	12	X	6	X	13	X
11	XI	5	XI	12	XI	6	XI	13	XI	7	XI	1	XI
12	XII	6	XII	13	XII	7	XII	1	XII	8	XII	2	XII
13	XIII	7	XIII	1	XIII	8	XIII	2	XIII	9	XIII	3	XIII
1	XIV	8	XIV	2	XIV	9	XIV	3	XIV	10	XIV	4	XIV
2	XV	9	XV	3	XV	10	XV	4	XV	11	XV	5	XV
3	XVI	10	XVI	4	XVI	11	XVI	5	XVI	12	XVI	6	XVI
4	XVII	11	XVII	5	XVII	12	XVII	6	XVII	13	XVII	7	XVII
5	XVIII	12	XVIII	6	XVIII	13	XVIII	7	XVIII	1	XVIII	8	XVIII
6	XIX	13	XIX	7	XIX	1	XIX	8	XIX	2	XIX	9	XIX
7	XX	1	XX	8	XX	2	XX	9	XX	3	XX	10	XX

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[a] Zeitschrift für Ethnologie, Berlin, 1891.

TABLE I (SECOND HALF)

11	I	5	I	12	I	6	I	13	I	7	I	1	I
12	II	6	II	13	II	7	II	1	II	8	II	And so on.	
13	III	7	III	1	III	8	III	2	III	9	III		
1	IV	8	IV	2	IV	9	IV	3	IV	10	IV		
2	V	9	V	3	V	10	V	4	V	11	V		
3	VI	10	VI	4	VI	11	VI	5	VI	12	VI		
4	VII	11	VII	5	VII	12	VII	6	VII	13	VII		
5	VIII	12	VIII	6	VIII	13	VIII	7	VIII	1	VIII		
6	IX	13	IX	7	IX	1	IX	8	IX	2	IX		
7	X	1	X	8	X	2	X	9	X	3	X		
8	XI	2	XI	9	XI	3	XI	10	XI	4	XI		
9	XII	3	XII	10	XII	4	XII	11	XII	5	XII		
10	XIII	4	XIII	11	XIII	5	XIII	12	XIII	6	XIII		
11	XIV	5	XIV	12	XIV	6	XIV	13	XIV	7	XIV		
12	XV	6	XV	13	XV	7	XV	1	XV	8	XV		
13	XVI	7	XVI	1	XVI	8	XVI	2	XVI	9	XVI		
1	XVII	8	XVII	2	XVII	9	XVII	3	XVII	10	XVII		
2	XVIII	9	XVIII	3	XVIII	10	XVIII	4	XVIII	11	XVIII		
3	XIX	10	XIX	4	XIX	11	XIX	5	XIX	12	XIX		
4	XX	11	XX	5	XX	12	XX	6	XX	13	XX		

This period of 260 days, the tonalamatl ("book of days"), in Mexican, ch′ol k′ih ("reckoning of days"), or k′am uuh ("book of fates"), in Guatemalleoan, was on the contrary called by the Mayas in Guatemala, it seems—though the general opinion is different—kin katun ("the order of days"), and was made to agree with the rest of the system of chronology in various ways.

The nations of ancient Mexico reckoned 365 days to their year. This appears from the nature of their designation of the year and from the number of years which they combined into a larger period. Since $365 = (28 \times 13) + 1$ and also $(18 \times 20) + 5$, it follows that when, for instance, a year began with a day which took the numeral 1 and the sign I, then the initial day of the following year must necessarily have been called by the numeral 2 and sign VI, that of the third year by numeral 3 and sign XI, of the fourth year by numeral 4 and sign XVI; while the initial day of the fifth year would take the numeral 5 and go back to sign I. We have thus the following series of beginnings of years:

Table II

1	I	1	VI	1	XI	1	XVI	1	I
2	VI	2	XI	2	XVI	2	I	And so on, as at the beginning.	
3	XI	3	XVI	3	I	3	VI		
4	XVI	4	I	4	VI	4	XI		
5	I	5	VI	5	XI	5	XVI		
6	VI	6	XI	6	XVI	6	I		
7	XI	7	XVI	7	I	7	VI		
8	XVI	8	I	8	VI	8	XI		
9	I	9	VI	9	XI	9	XVI		
10	VI	10	XI	10	XVI	10	I		
11	XI	11	XVI	11	I	11	VI		
12	XVI	12	I	12	VI	12	XI		
13	I	13	VI	13	XI	13	XVI		

We see that, if we presuppose a year of 365 days, only four of the twenty day signs fall on initial days—four signs which are five signs distant from each other.

And we see that if we accept the theory of a year of 365 days a period of 52 years necessarily ensues. For since 365 = 5 × 73, and 73 is a prime number, it can only occur after 260÷5, or 52, years, that the same number and the same sign of the tonalamatl will fall on the initial day of the year. Now we know by the unanimous statements of historians and documents that the Mexican nations designated their years after the fashion shown by the above tables of initial days of the year, and it is authoritatively stated of certain races that these names of the years were taken from the names of their initial days. On the other hand, we know that all the ancient nations of Mexico knew a period of 52 years and reckoned by it. We must therefore conclude that the year of 365 days was indeed accepted in Mexico, as was stated above, and therefore that the computation of time fell behind the actual length of the year by 6 hours, 9 minutes, and 10 seconds in the intercalary year and by 5 hours, 48 minutes, and 48 seconds in the ordinary year.

This simple and clear, and, when we consider the degree of civilization of the ancient Mexicans, by no means very remarkable fact, has up to the present time been obstinately overlooked by the authors who have written upon Mexican chronology. There are three circumstances in particular which interfere with a correct conception of the state of affairs—first, certain assumptions in respect to the last five days of the year; then, the assertions of historians in regard to interpolations which are supposed to have taken place at certain regularly recurring periods; and, lastly, the variability of the beginning of the year among various races and also, as it seems, at various times, which has hitherto rendered impossible any authentic concordance of fixed historically certified dates of the Mexican calendar with our chronology.

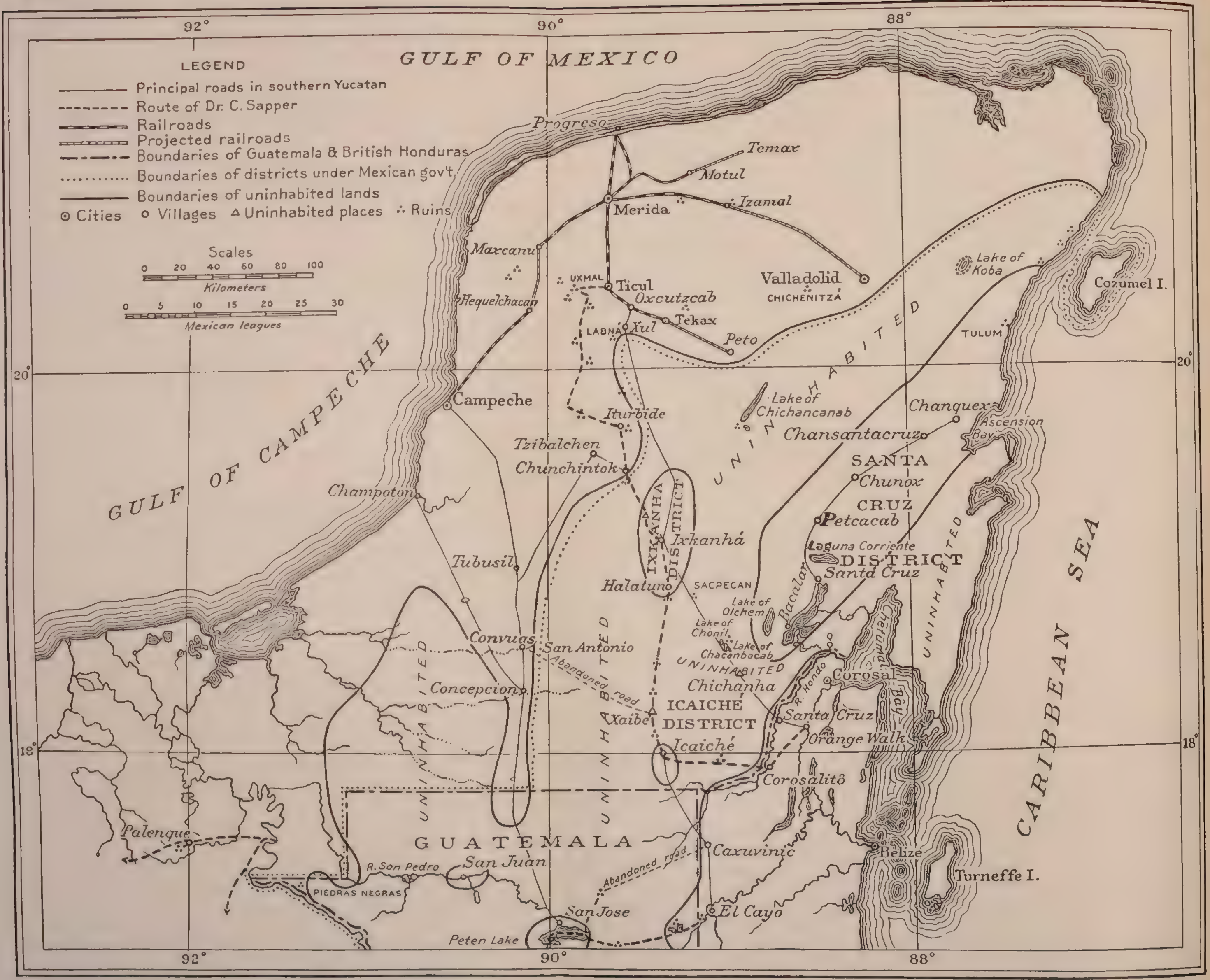
The chronologic unit, 20 days, is contained eighteen times in 365 days. Each of these eighteen twenties—falsely called "months" by the Spanish—was dedicated to a special deity and gave rise to a special festival, which was connected with the season of the year, the work to be done at that season, and with that which was expected of the season. Five days were left over, to which, as superfluous, a certain sinister meaning was ascribed. The Mexicans called them nemontemi or nen-ontemi, that is, "the superfluous, supplementary days", with the secondary significance, "the useless days, which were consecrated to no deity, useful for no civic business"—acam pouhqui, "which neither fell to any nor were dedicated to any, which were held in no esteem", as appears from the Aztec text of book 2, chapter 37, of the historical work by Father Sahagun, in which they are explained in these words: Estos cinco dias á ningun dios están dedicados, y por eso les llamavan nemontemi, que quiere decir por demás ("These five days are dedicated to no god, and hence they are called nemontemi, which is to say superfluous"). They were held to be harmful days (baldios y aciagos). For with the word nen, "that which exceeds", was also connected the idea of "superfluous", "unfit", "useless". No action of any importance whatever, nor any which transcended the circle of the most necessary offices of life, was undertaken. The house was not swept, no cause was tried, and the unfortunate person who was born on one of these days, "is destined to no happiness; miserable and wretched and poor shall he live upon the earth" (quihiotinemiz ompa onquiztinemiz yn tlaltiepac). But these days had, especially, a prophetic power for the whole year (ayac teauaya, ayac manaya, auh yn aca oncan teaua, quilmach cenquicui) "No one quarreled, no one got into any dispute, for whoever quarreled on these days, it was believed, would always continue to do so", we read in Sahagun's Aztec text. And still more explicit is another passage, which Sahagun gives in the following words: Guardabanse en estos dias fatales, de dormir entre dia, ni de reñir unos con otros, ni de tropezar, ni de caer, porque decian que si alguna cosa de estas les acontecia que siempre les habia de acontecer adelante ("They were careful during these fatal days not to fall asleep during the day, not to quarrel together, not to trip or to fall, because they said that if any of these things befell them, they would continue to befall them thence forevermore").

We find the same notion in Yucatan. On these days men left the house as seldom as possible, did not wash or comb themselves, and took special care not to undertake any menial or difficult task, doubtless because they lived in the conviction that they would be forced to keep on doing it through the whole ensuing year. The Mexicans were

20°
18°

more passive in regard to these days, inasmuch as they merely took care to avoid conjuring up mischief for the coming year, while the Mayas did things more thoroughly. During these days, so portentous for the entire year, they banished the evil which might threaten them. They prepared a clay image of the demon of evil, Uuayayab, that is, u-uayab-haab ("by whom the year is poisoned"), confronted it with the deity who had supreme power during the year in question, and then carried it out of the village in the direction of that cardinal point to which the new year belonged.

Of these five days writers commonly say "they were not counted." And we take this to mean that the ordinary designation of the days by numerals and signs was not applied to these days. It is true that Sahagun's Aztec text affords ground for this supposition, for it says of the nemontemi: Yn aoctle yn toca tonalli, yn aocmo ompouih, yn aocmo om pouhque ("The days no longer have names; they are no longer counted"). And farther on: Ca atle ytonal, ca atle ytoca . . . ca nel amo ompouhque atle ypouallo ("They have no signs, no names . . . for in truth they are not counted"). Durán states even more clearly: Los cinco dias que sobraban, tenian los esta nacion por dias aciagos, sin cuenta ni provecho; asi los dejaban en blanco, sin ponerles figura ni cuenta, y asi los llamaban nemontemi, que quiere decir dias demasiados y sin provecho ("The five days that remained this nation held to be unfortunate days, of no account or advantage; so they left them blank, without giving them figure or account, and so called them nemontemi, which means days superfluous and of no advantage"). In Yucatan these days were also directly designated as xma kaba kin ("days without names"). And what Durán states is illustrated in Landa; in the calendar recorded by him, the five superfluous days are left blank, without number or sign. Are we therefore actually to suppose that these days interrupted the continuous tonalamatl calculation? I think not. The acam pouhqui and aocmo ompouhque do not state that these days are dropped out of the reckoning, but, as Sahagun also quite correctly explains, that no feast was celebrated upon them; that they were held improper and worthless for civic action. Compare acan ompoui, cosa insuficiente y falta, ó persona de quien no se hace caso ("insufficient and faulty thing, or person held of no account"). (Molina.) We must also attach the same meaning to the phrase atle ytoca and the Maya designation xma kaba kin. And if these days were left blank, according to Durán and Landa, this only signified that men avoided mentioning these unlucky days in any way. They were counted in silence. Otherwise Landa, for instance, could not state that the successive years began with the dominical letters Kan, Muluc, Ix, Cauac, that is, with signs IV, IX, XIV, XIX; but we should have to assume, as, indeed, old Gama does,


92°
90°
88°
20°
18°
GULF OF MEXICO
LEGEND
Principal roads in southern Yucatan
Route of Dr. C. Sapper
Railroads
Projected railroads
Boundaries of Guatemala & British Honduras
Boundaries of districts under Mexican gov't.
Boundaries of uninhabited lands
⊙ Cities
○ Villages
△ Uninhabited places
∴ Ruins
Scales
0 20 40 60 80 100
Kilometers
0 5 10 15 20 25 30
Mexican leagues
Progreso
Temax
Motul
Izamal
Merida
Maxcanu
Hequelchacan
UXMAL
Ticul
Oxcutzcab
Tekax
LABNA
Xul
Peto
Valladolid
CHICHENITZA
Lake of Koba
Cozumel I.
TULUM
GULF OF CAMPECHE
Campeche
Iturbide
Tzibalchen
Chunchintok
Champoton
Tubusil
UNINHABITED
Lake of Chichancanab
Changuex
Ascension Bay
Chansantacruz
SANTA CRUZ DISTRICT
Chunox
Petcacab
Laguna Corriente
Santa Cruz
IXKANHA DISTRICT
Ixkanhá
Halatuno
SACPECAN
Lake of Olchem
Bacalar
Lake of Chonil
Lake of Chacanbacab
UNINHABITED
Chetumal Bay
UNINHABITED
CARIBBEAN SEA
Convuas
San Antonio
Abandoned road
Concepcion
UNINHABITED
UNINHABITED
Chichanha
ICAICHE DISTRICT
Xaibe
Icaiché
R. Hondo
Corosal
Santa Cruz
Orange Walk
Corosalitô
Palenque
GUATEMALA
R. San Pedro
San Juan
PIEDRAS NEGRAS
Abandoned road
Caxuvinic
Belize
Turneffe I.
San Jose
El Cayo
Peten Lake

MAP OF YUCATAN

though doubtless incorrectly, that all years began with the same numeral and the same sign.

It seems, on the contrary, to be correct, as Gama (Dos Piedras, page 75) states, that the five days nemontemi were destitute of acompañados, that is, that the constantly repeated series of the nine so-called señores de la noche ("lords of the night"), which were continuously counted along with the signs for the days, were only extended to the three hundred and sixtieth day of the year. Gama's chief sources for his assertions in regard to the old chronology are the notes written in the Mexican language by Don Cristóbal del Castillo, an Indian of the aristocratic Tetzcocan race, who died in 1606 at the age of 80. His notes are also undoubtedly the source from which Gama took the calendar which he prints on pages 62 to 75 of his book, and this therefore has the authority of unbroken tradition in its favor. This calendar begins the year with ce Cipactli, that is, 1 I, and further counts the nemontemi with numerals and signs (10 I, 11 II, 12 III, 13 IV, 1 V). But the series of nine señores de la noche breaks off with the three hundred and sixtieth day of the year. Orozco y Berra makes the interesting suggestion that the object of this double computation was to distinguish the days of the year which, by the tonalamatl reckoning, would take the same numeral and sign, by omitting the "acompañado". In fact, if the first day of the year, which Gama places on the 9th of January, were distinguished by 1 I, then the two hundred and sixty-first day of the year, that is, September 26, would receive the same name. But if the first day (1 I, or January 9) were accompanied by the first of the "acompañados" (Xiuhtecutli Tletl), the last day (1 I, or September 26) would take the ninth (Quiauitl-Tlaloc), for 260÷9=28 and 8 over. If Gama's statement that the nemontemi are destitute of acompañados be correct, then the successive years would always begin with the same acompañado. And if we take the first of them, the fire god, as that of the initial day, we may perhaps have in this circumstance the simple explanation of the most common of the various names of the fire god, that is, Xiuhtecutli ("Lord of the year").

With the nemontemi are connected the oldest statements in regard to interpolations, which are said to have been made at stated periods by the Mexicans, in order to bring their year of 365 days into harmony with the actual length of the solar year. Father Sahagun says in the heading to the nineteenth chapter of his second book: Hay conjetura que cuando ahujeraban las orejas á los niños y niñas, que era de cuatro en cuatro años, echaban seis dias de nemontemi, y es lo mismo del bisiesto, que nosotros hacemos de cuatro en cuatro años ("There is a conjecture that when they pierced the ears of the boys and girls, which was every four years, they rejected six days as nemontemi, and it is the same as the leap year which we make every four years").

And in another place: Otra fiesta hacian de cuatro en cuatro años á honra del fuego, en la qual ahujeraban las orejas á todos los niños, y la llamaban pillauanaliztli, y en esta fiesta és verosimil y hay conjeturas que hacian su bisiesto, contando seis dias de nemontemi ("They celebrated another festival every four years in honor of fire, in which they pierce the ears of all the children, and they called it pillauanaliztli, and in this festival it is probable and there are conjectures that they made their leap year, counting six days as nemontemi"). Observe, the Father says: És verosimil y hay conjeturas ("It is probable and it is conjectured"). He does not say that he has heard it, and, indeed, there is not a word about it in the passages in question of the Aztec text. Father Sahagun's conjecture is repeated as an actual fact by later authors. The learned Dominican Father Burgoa gives it as such in regard to the Mixteca and the inhabitants of Tehuantepec (Geografica Descripcion, quoted by Orozco y Berra, volume 2, page 136), without furnishing any evidence for his assertion. On the other hand, other ancient authors directly contradict this supposition. Father Motolinia, who was one of the first missionaries to the country, says: Los indios naturales de esta Nueva España, al tiempo que esta tierra se ganó y entraron en ella los Españoles, comenzaban su año en principios de Márzo; mas por no alcanzar bisiesto, van variando su año por todos los meses ("The native Indians of this New Spain, at the time when this land was gained and the Spaniards entered into it, commenced their year at the beginning of March; but not understanding leap year they keep changing their year through all the months"). Father Torquemada is of the same opinion. And the author of the Chronica de la S. Provincia del Santissimo Nombre de Jesus de Guatemala of the year 1683 remarks: Porque como ni los Mexicanos ni estos (los Guatemaltecas) alcanzaron el bisiesto . . . se apartaban y diferenciaban de nuestro calendario, y asi ni estos ni los Mexicanos comenzaban siempre su año a primero de nuestro Febrero sino que cada cuatro años se atrasaban un dia . . . ("Because since neither the Mexicans nor these (the Guatemalans) understood leap year . . . they differed from our calendar, and so neither they nor the Mexicans commenced their year always at the first of our February, but every four years they were behind one day . . ."). Indeed, had such an intercalation actually occurred, the period of 52 years and the consequent further designation of the days in it would be an absurdity; or, at least, this intercalation must have been noted as an important factor in every enumeration extending over the period of four years. But I have not hitherto been able to find any trace of it either in the Aztec or the Maya manuscripts.

Knowing the difficulty of establishing any agreement in this way between the old Indian chronology and the more correct European computation of time, later writers have suggested that an entire week of 13 days was interpolated at the end of the xiuhmolpilli, the period of 52 years. This theory is probably to be ascribed to the learned Jesuit Don Carlos Sigüenza y Góngora, who lived in the second half of the seventeenth century. The work of this author, Ciclografia Mexicana, is apparently lost, but Gemelli Carreri and Clavigero refer to it. Sigüenza had important documents at his disposal, papers and picture manuscripts, which belonged to Don Juan de Alva Ixtlilxochitl, a descendant of the royal Tetzcocan family, and he was a trained astronomer. His conjecture is all the more acceptable also because it leaves the arrangement of the days in the period of 52 years untouched. In spite of this I think that his assertions rest upon groundless conjectures. Nowhere in the older authors do we learn that a festival of 13 days' duration was held at the end of the period of 52 years. They always refer to one night only, the turning point of the century, during which the people awaited the flaming up of the new fire upon Uixachtepec with fear and trembling. In the picture manuscripts we find periods of time set down which extend over the period of 52 years, and where the arrangement of the days is carried over without a jump from one period to the other (see, for instance, pages 46 to 50 of the Dresden manuscript, the well-known pages from which E. Förstemann proved the series of dates to be 236, 90, 250, and 8 days apart). On them are recorded, beginning with the day 1 Ahau, the thirteenth of the month Mac, 13×2,920 days, or a period of 13×8, that is, 2×52, or 104, years, in dates separated by regular distances, without a hiatus of any kind between one and the other of the two cycles of 52 years. Still greater periods of time are noted down upon the last leaves of the Dresden manuscript by continuous, uninterrupted dates accompanied by check numbers.

But the advocates of intercalation also appeal to manuscripts. Clavigero (volume 2, page 62) says: Questi tredici giorni erano gl'intercalari, segnati nelle lor dijunture con punti turchini; non gli contavano nel secolo già compito, neppur nel seguente, nè continuavano in essé i periodi di giorni, che andavano sempre numerando dal primo sino allo ultimo giorno del secolo ("These thirteen days were the intercalary ones, designated in printing them by blue dots; they were not counted in the century already completed, nor in the following one either, nor were the periods of days continued in them which were continuously numbered from the first to the last day of the century"). Clavigero himself has not seen these manuscripts, but refers to Don Carlos Sigüenza. The materials which Sigüenza possessed seem for the most part to have passed into the possession of Boturini. In consequence of their seizure by vice-regal authority they disappeared from the scene. A part of them are in the Aubin collection, whose present owner is M. Eugène Goupil, of Paris. I do not think that there are any papers among them which justify Clavigero's assertion. And yet I have seen blue numeral signs in a Maya manuscript, which might be interpreted in the sense of a correction or possibly also of an interpolation. On pages 23 and 24 of the Perez codex, the Mexican manuscript of the Bibliothèque Nationale at Paris are thirteen columns of 5 days each, which must be read from right to left and from above downward, as the addition and as the position of the hieroglyphs show, which, unlike the mode of writing employed elsewhere in the Maya manuscripts, is face backward (to the left). The separate dates in the series each differ by 28 days and the last date in the first (top) row differs from the first date in the second row by 28 days also. There are in all 5×13×28, or 7×260 days, that is, the space of 7 tonalamatl. The numerals belonging to the dates of the days are, as usual, written in red, but above or below each column of figures another figure is written in blue, which would denote a date some 20 days further on. This is evidently a correction, but scarcely one which can be taken for a sort of intercalation. It is a correction which states what figures belong to the dates when the beginning of the whole series is pushed forward by a unit of 20 days.

León y Gama varies Sigüenza's theory of intercalation by stating (Dos Piedras, pages 52 and 53) that the Mexicans interpolated 25 days at the close of a double cycle of 104 years, or 12½ days at the end of a 52-year cycle, and according to this the days of the one cycle began in the morning, those of the other in the evening. But this is mere speculation. Finally, the theory of the Jesuit Fabrega, with which A. von Humboldt agrees (Vue des Cordillères, volume 2, page 81), that the Mexicans suppressed 7 days at the close of a great period of 20 cycles, or 1,040 years, and thus reduced their year to almost the exact length of the tropical year, rests upon an actual error. The passage in question from the Borgian codex (pages 62 to 66) by no means treats of so long a space of time. The simple series of twenty day signs is represented by beginning with Malinalli, or XII, on page 66 and ending on page 62 with Ozomatli, or XI. The signs were undoubtedly originally intended to be distributed around four sides of a square with the last (Ozomatli) in the middle.

If, as I believe, the theory of intercalation is to be rejected, the question arises all the more forcibly, How did the Mexicans contrive to make their system of chronology agree with the actual time? Must they not have speedily observed that their annual feasts, which fell in portions of the year determined by the course of the sun, the alternation of wet and dry weather, winter sleep and perfection of vegetation, were noticeably advanced in the course of successive years? Doubtless they did observe it, but they could hardly have known how to remedy it. And doubtless the confused and contradictory statements given by the Indians themselves in regard to the time of their new year and the true time of the various festivals were due to this uncertainty, to the lack of intercalations. Es de notar ("It is to be noted"), says Sahagun at the close of his seventh book, que discrepan mucho en diversos lugares del principio del año; en unas partes me dijeron que comenzaba á tantos de Enero; en otras que á primero de Febrero; en otras que á principios de Marzo. En el Tlaltelolco junté muchos viejos, los mas diestros que yo pude aver, y juntamente con los más hábiles de los colegiales se altercó esta materia por muchos dias, y todos ellos concluyeron, diciendo, que comenzaba el año el segundo dia de Febrero ("that the beginning of the year differs greatly in different places; in some parts they told me that it began on such a day in January; in others on the 1st of February; in others at the beginning of March. In Tlalteloleo I assembled many old men, the most skillful possible, and together with the most learned scholars they disputed as to this matter for many days, and they all concluded by saying that the year began on the second day of February").

The festivals connected with the course of the seasons, with their elaborate ceremonies, had undoubtedly been observed from the earliest ages and were similarly celebrated over large portions of the country. The fixing of the beginning of the year was closely connected with these festivals, and was also, as may positively be asserted, originally the same over large portions of the country. The earlier, however, that a tribe gave up vaguely determining these festivals according to the course of the sun and the condition of the crops and the priests began to keep account of them by means of the continuous tonalamatl computation, the more must the beginning of the year and the festivals, or the relation of the latter to the beginning of the year, have been displaced for that tribe.

There is reason to believe that what the Indian conference called together at Tlaltelolco by Sahagun finally determined, namely, that the year began with the Quauitleua, the feast of the rain god (Tlaloque), and on the 2d of February, according to Christian computation, very nearly corresponded to the original custom; for in far distant Yucatan, inhabited by a different civilized nation, we find an approach to this idea in Landa's statement that the Mayas celebrated in honor of the rain gods (Chac), the feast Ocna ("Entrance into the house"), or, as Landa translates it, "Renewal of the temple", in one of the so-called months (really units of 20 days) Chen and Yax; that is, about the month of January, on a day which the priests expressly determined, doubtless according to the chronology kept by them. Miraban los pronósticos de los Bacabes ("They beheld the prophecies of the Bacabs"); that is, they decided according to the deity who ruled over the year whether the year would be good or bad. Y demas desto renovavan los idolos de barro y sus braseros, y si era menester, hacian de nuevo la casa ó renovabanla, y ponian en la pared la memoria destas cosas con sus caracteres ("And besides this they renewed their idols of clay and their braziers, and if necessary they rebuilt the house or renovated it, and placed upon the wall the memory of these things in their proper characters"); that is, they established the character which the year was to have and renewed their objects of worship and household utensils—ceremonies whose original meaning can only have been that the beginning of the year was set at this time. In fact, the Zòtzil of Chiapas, whose people were near kin to the Mayas, seem also to have begun the year with the month Chen, which they called Tzun, that is, "beginning" (see Pineda, quoted by Orozco y Berra, volume 2, page 142). I may remark by the way that, just as we find the New Year's feast of the Mexicans among the Mayas, so, too, the manner in which half a year later, in the month of July, the Mayas observed their real New Year by solemnly conducting the spirit of evil out of the village finds an analogy among the Mexicans in the broom festival (Ochpaniztli), observed in August.

The decision of the Indian conference at Tlalteloleo—that the first day, Quauitleua, fell at the beginning of February—must therefore also be regarded as corresponding quite closely to the actual custom, because if it did so the various festivals were suited to the seasons in which they fell. The sixth feast, Etzalqualiztli, which refers to the setting in of the rainy season, fell on May 13. Don Cristóbal del Castillo, who drew his information from Tetzcocan sources, and whom Gama follows, begins the year with the feast Tititl, which lay two twenties back, but sets the beginning of the year full 24 days earlier, so that by his reckoning the feast Etzalqualiztli, belonging to the opening of the rainy season, falls on the 29th of May. The interpreter of the Codex Vaticanus A in one place accepts the 15th, in another the 24th of February, as the beginning of the year. According to this Etzalqualiztli would fall on May 26 or June 4. Clavigero's opinion that the 26th of February and Durán's that the 1st of March was the beginning of the year do not differ very widely from what is indicated by the nature of the seasons. Etzalqualiztli, the setting in of the rainy season, would fall on the 6th or 9th of June. We should thus have for the latter event, specially important in the life of the civilized peoples of Mexico, a range of about the length of one of our months, which fully corresponds with the natural conditions. If, finally, Tlaxcaltec sources make the year begin with Atemoztli, a feast occurring some three twenties before Quauitleua, this gives us as the latest term which we find appointed for Quauitleua the last of December as the beginning of the year—a theory which again changes the beginning of the year to what was a significant time as well to the Mexicans as the Mayas: the middle of the dry season. But the very fact that the nemontemi, the final and supplementary days of the year, were set now before Quauitleua, now before Tititl, now before Atemoztli, or elsewhere, as before Tlacaxipeualiztli, as according to the Guatemalan Crónica Franciscana of 1683, was usual among the Cakchikels, proves that festivals were displaced among the Mexicans, that their years were actually too short, and that they were constantly falling into confusion in their calendar of feasts.

But if among the Mexicans festivals were constantly displaced in consequence of their inability to express the real length of the year in their system of chronology, on the other hand the tonalamatl computation offered a strong framework, which, elaborated by the expert hands of priests, left not a moment's doubt as to the space of time which divided a given day from another. At one point only is the uncertainty of Mexican chronology apparent here; that is in regard to the first day of their year and to the titles which were assigned to the different years, corresponding to their initial days. If, as I said above, it necessarily follows from the system of the tonalamatl and the acceptance of a year of 365 days that of the twenty day signs only four fall on the opening days of the year, which four were each four signs apart, one from the other (that is, there were four intermediate signs), and if we further find that the years were usually designated by four day signs standing four signs apart, it is then the most natural inference that it was from the initial days of the year that these years themselves were named. But this does not seem, or at least not universally, to have been the case.

Among the Mexicans the years were designated by the signs Acatl (reed), Tecpatl (flint), Calli (house), Tochtli (rabbit); that is, XIII, XVIII, III, and VIII, of the twenty day signs. To these correspond exactly the Chiapanec, Been, Chinax, Votan, Lambat, while in Yucatan the signs Kan, Muluc, Ix, Cauac—that is, IV, IX, XIV, and XIX of the day signs—were used for successive years. The four signs, Acatl, Tecpatl, Calli, Tochtli, were registered upon the four arms of a cross with hooks, in the style shown in figure 2. By following a circle in the direction opposite to that in which the hands of a clock move we pass from 1 Acatl past 2 Tecpatl, 3 Calli, 4 Tochtli, to 5 Acatl, etc., until we come to 13 Tochtli. As this registration suggests, the years recorded on one arm of the cross with hooks were always referred to a particular quarter of the heavens; the Acatl years to the east, Tecpatl to the north, Calli to the west, and the Tochtli years to the south. Computation within the cycle began in the east with the Acatl years, not with 1 Acatl, but, singularly enough, with 2 Acatl, so that the cycle closed with 1 Tochtli. The present period of the world began, so the Mexicans believed, in the year 1 Tochtli. The earth was created in this period, or rather the heavens, which fell at the close of the last prehistoric period of the world, were again lifted up. Not until this was completed could fire be again produced and the first cycle of 52 years be thus begun. This is expressly stated in the Fuenleal codex of the Historia de los Mexicanos por sus Pinturas.

Therefore 2 Acatl is the opening year of the first and of all following cycles. As such it is also designated in all picture manuscripts of historical nature by the fire drill. The statement of the interpreter of the Codex Telleriano-Remensis, part 4, page 24, on which Orozco y Berra lays so much stress, that the beginning of the cycle was first changed from 1 Tochtli to 2 Acatl in the year 1506, under Motecuhzoma, on account of the famine which regularly occurred in previous years, is merely an attempt to explain the remarkable fact that the cycle begins with the numeral 2 in a euhemeristic way. But Clavigero's assertion that the cycle began with 1 Tochtli is simply an error. It contradicts the accounts of ancient authorities and all that documents tell us.

With what days did the years begin? Durán and Cristóbal del Castillo say that the year began with Cipactli, the first of the twenty signs for the days. And if this is to be accepted as the initial day of one year, then the others would begin with Miquiztli, Ozomatli, Cozcaquauhtli, VI, XI, and XVI of the signs for the days. This is Clavigero's theory. He begins the years Tochtli, Acatl, Tecpatl, Calli, corresponding with Cipactli, Miquiztli, Ozomatli, Cozcaquauhtli. I, myself, formerly believed that the years Acatl, Tecpatl, Calli, Tochtli were to be coupled with the days Cipactli, Miquiztli, Ozomatli, and Cozcaquauhtli as initial days, relying upon page 12 of the Borgian codex which agrees with Codex Vaticanus B, page 28, where we see represented by five Tlaloc figures the five cardinal points and their significance in the life and housekeeping of men, and among the first four of them the signs for the four years coordinated in the above manner with the signs of the aforesaid four days. But I have recently become puzzled again, since the above-mentioned pages of the manuscripts very readily admit of another explanation. For not only were the years of the cycle apportioned among the four cardinal points, but so also were the four divisions of the tonalamatl, beginning with 1 Cipactli. The initial days of the four quarters were plainly designated in the Zapotec calendar—which, as we shall see, perhaps represents one of the most primitive forms of this chronologic system—as the Cocijo or pitào, that is, "the holders of time", "the rain gods", or "the great ones", "the gods".[*] In these names we find, then, a direct reference to the Tlaloc figures, which we see depicted in the Borgian codex, page 12, and Codex Vaticanus B, page 28, as representatives of the cardinal points. And the day signs set down under the latter signify those very initial days of the tonalamatl divisions and the initial years of the cycle divisions which were supposed to be coordinated with the cardinal points.

The wisdom of the Mexican priest chroniclers spent itself in elaborating the tonalamatl from its arithmetico-theoretic and augural side. There is not—aside from a passage in the Maya manuscript, of which

I shall speak further on—a single place in the entire mass of picture manuscripts belonging to the pre-Spanish time where the successive years are enumerated with their initial days. This fact alone should make us suspicious in regard to the assertions of Durán and Cristóbal del Castillo. For Cipactli, the first day of the tonalamatl, and the following signs are generally used in the manuscripts somewhat as are our numerals 1 to 20. Bishop Landa also states directly of the Maya calendar, that the first day of the year and the first day of the tonalamatl had absolutely nothing to do with each other. If we take into consideration the confusion, which, as I have explained above, prevailed in Mexico in regard to the beginning of the year, we can not avoid the impression that the opening days of the year were also displaced in the course of time, and thus could not always keep the same names. If we once admit this, then the fact that it became necessary to call the successive years by the names of the days Acatl, Tecpatl, Calli, Tochtli, acquires increased meaning. We can not well refuse to assume that at the time when and in the place where it first occurred to the learned that only four of the twenty signs for the days fall upon the initial days of the years, it was just these very days, Acatl, Tecpatl, Calli, Tochtli, with which the year then and in that place began, or at least, that these days, for whatsoever reasons, then and in that place were chosen for the opening days of the year. I find an indirect proof that this was indeed the case in the fact that ancient accounts from two remote and widely separated localities, from Meztitlan, on the boundaries of Huaxteca, and from Nicaragua, make the series of twenty day signs begin with Acatl. In the Dresden manuscript the years do not begin with Kan, Muluc, Ix, Cauac, the fourth, ninth, fourteenth, and nineteenth day signs, with which, at a later period, to judge from Landa and the books of Chilan Balam, the Mayas began their years, but with Been, Ezanab, Akbal, and Lamat, that is, the thirteenth, eighteenth, third, and eighth signs, which answer to the Mexican Acatl, Tecpatl, Calli, Tochtli.

In a paper presented before the International Americanist Congress at Berlin E. Förstemann, to whom we owe so many discoveries, especially in regard to the mathematics of the Dresden manuscript, furnished proof that the many high numbers which are to be found, particularly in the second part of the Dresden manuscript, take for granted that the day 4 Ahau (4 XX), the eighth of the month Cumku (the last of the eighteen annual festivals), is to be regarded as a zero mark, inasmuch as, if we count on from this day for the number of days which the figure standing above gives us, we obtain a different date, which—again exactly indicated by numeral and sign and statement of what day of which month—is noted beside it. Now Mr Förstemann saw very plainly that this zero mark, 4 Ahau, 8 Cumku, with which the other dates in the manuscript, with a very few exceptions, agree, clearly can not be made to harmonize with Landa's theory of the beginning of the year. He therefore says that 8 Cumku is to be understood as "the eve of a festival", the day which is followed by the eighth day of the month Cumku. The ingeniousness of this explanation certainly satisfied Mr Förstemann less than anyone. I hold that 8 Cumku can not well be anything else than the eighth day of the month Cumku. And if a day 4 Ahau (4 XX) was the eighth day of the month Cumku, then the first day of that month must be a day 10 Been (10 XIII) and the year must also have begun with Been, the thirteenth day sign, the Mexican sign Acatl. According to this, therefore, the signs of the first days of the years were not the fourth, ninth, fourteenth, nineteenth day signs (Kan, Muluc, Ix, Cauac), but the thirteenth, eighteenth, third, eighth day signs, Been, Ezanab, Akbal, Lamat, or in Mexican, Acatl, Tecpatl, Calli, Tochtli. That this is actually the case in the Dresden manuscript is also confirmed elsewhere.

Not unlike the Mexicans in their custom stated above, the Mayas also assigned the successive years of the cycle to the four cardinal points. The books of Chilan Balam, a copy of which, prepared by the late lamented Doctor Berendt, I had occasion to use in Doctor Brinton's library, unanimously ascribe the Kan years to the east, the Muluc years to the north, the Ix years to the west, and the Cauac years to the south. To be sure, Landa contradicts this. Still the same relation follows from his assertions. For the Kan years, which he assigns to the south, were the years in the days preceding which, according to his statements, the spirit of evil dominating the Kan years was brought into the village from a southerly direction, and then borne out of the village on the eastern side, that is, in the direction probably significant of the new year. And so, too, with the other years: "The Chac-uuayayab of the Muluc years is taken out toward the north, the Zac-uuayayab of the Ix years toward the west, and the Ek-uuayayab of the Cauac years toward the south."

Now, what years and what cardinal points are connected in the manuscripts? There is no lack of hieroglyphs for the four and the five cardinal points, respectively, in the manuscripts. We know distinctly that *a* to *d* in figure 1 represent the four cardinal points, and that *e* to *g* are probably variants of a hieroglyph for the fifth cardinal point, the direction upward from below, or downward from above. It was, however, still doubtful how *a* to *d*, figure 1, are to be referred to the four cardinal points. Schultz-Sellack (Zeitschrift für Ethnologie, volume 9, page 221, 1879) and Léon de Rosny were of the opinion that *a* to *d*, respectively, denote the east, north, west, and south. Cyrus Thomas, in his Study of the Manuscript Troano, exchanges *a* and *c* and asserts that the former represents the west, the latter the east. In his recent work, published in the Third Annual Report of the Bureau of Ethnology, he reverses the entire order and states that *a* to *d*, figure 1, correspond respectively to the west, south, east, and north. But the argument which leads him to this assertion is obviously incorrect. It is true that the Mexicans generally arranged the sequence of the cardinal points in the direction opposite to the course of the hands of a clock, as is shown in figure 2. But as for the double page 41 and 42 of the Cortes codex, on which Cyrus Thomas rests his assertion, the glyphs of the cardinal points *a* to *d* there inscribed within the quadrants do not refer, as Professor Thomas states, to the dates written in the left-hand corner of the quadrants (1 Ix, 1 Cauac, 1 Kan, 1 Muluc), but to the whole series of days which are denoted in the said quadrants, partly by their glyphs, and partly by the dots connecting the glyphs.

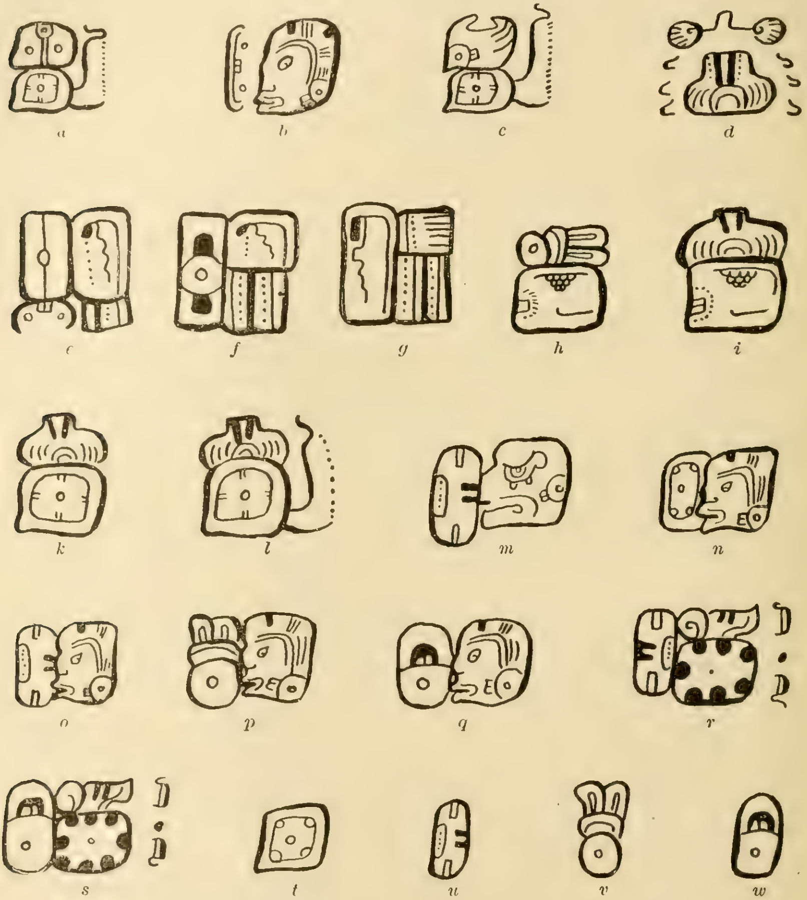


FIG. 1. Symbols of the cardinal points, colors, etc.

In the quadrant containing the cardinal point of *a*, figure 1, are recorded the days from 1 Imix (1 I) to 13 Chicchan (13 V), that is, the whole first quarter of the tonalamatl, the days beginning at the inner left-hand corner and following one another over the outer left-hand corner and the outer right-hand corner as far as the inner right hand corner; and in the same manner in the quadrant following in the direction opposite to the course of the hands of a clock, in which the cardinal point *b*, figure 1, is written, are recorded the days which form the second quarter of the tonalamatl; and again in the third quadrant, which contains the glyph *c*, figure 1, is the third quarter; and in the last quadrant, with the glyph *d*, figure 1, the last quarter of the tonalamatl. Since we know that the four quarters of the tonalamatl, beginning with 1 I, 1 VI, 1 XI, and 1 XVI, were respectively ascribed to the east, north, west, and south, this double page from the Cortes codex is the strongest proof that Schultz-Sellack and Léon de Rosny were right in referring the hieroglyphs *a* to *d*, figure 1, respectively to the east, north, west, and south.

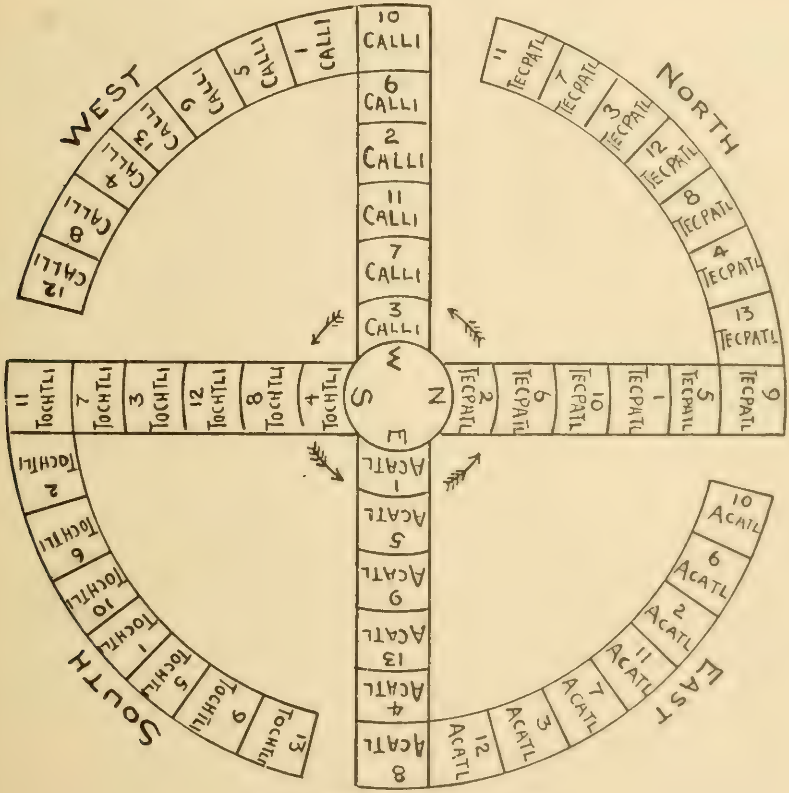

WEST
NORTH
EAST
SOUTH
10 CALLI
6 CALLI
2 CALLI
11 CALLI
7 CALLI
3 CALLI
1 CALLI
5 CALLI
9 CALLI
13 CALLI
4 CALLI
8 CALLI
12 CALLI
11 TECPATL
7 TECPATL
3 TECPATL
12 TECPATL
8 TECPATL
4 TECPATL
13 TECPATL
2 TECPATL
6 TECPATL
10 TECPATL
1 TECPATL
5 TECPATL
9 TECPATL
W
N
E
S
11 TOCHTLI
7 TOCHTLI
3 TOCHTLI
12 TOCHTLI
8 TOCHTLI
4 TOCHTLI
2 TOCHTLI
6 TOCHTLI
10 TOCHTLI
1 TOCHTLI
5 TOCHTLI
9 TOCHTLI
13 TOCHTLI
1 ACATL
5 ACATL
9 ACATL
13 ACATL
4 ACATL
8 ACATL
10 ACATL
6 ACATL
2 ACATL
11 ACATL
7 ACATL
3 ACATL
12 ACATL

FIG. 2. Mexican calendar wheel form.

In *a* and *c*, figure 1, is contained, in their lower half, an element which is contained in the month name Yaxkin (*k* and *l*, figure 1) and undoubtedly denotes the sun (kin), the disk sending out rays of light to the four cardinal points. In *k* and *l* this element is combined with another, which also occurs in the glyph of the month name Yax (*i*, same figure), and which, as comparison with other glyphs shows, denotes "green tree" (yax). In *a*, figure 1, the element kin is combined with the glyph of the twentieth day sign, which is in Maya called Ahau. Ahau, abbreviated ah, means "the lord", "the king". The word is connected with a verb ah, which means "to rise up", "to awake", "to rise"; ahal-ik, "the wind rises"; ahal-cab, "the world wakes" (the day breaks); ahi cab, "from the beginning of the world". This glyph should therefore be read ahal-kin, "the sun rises," and this is equivalent to likin, the true Maya expression for the cardinal point of the east.

In *c*, figure 1, on the other hand, the element kin is combined with another, which serves as the glyph of the seventh day sign, in Maya called Manik, which corresponds to the Mexican mazatl, "deer". The element represents a hand with the four fingers curved toward the thumb. I have already explained this in my essay on the Character of the Aztec and Maya manuscripts (Zeitschrift für Ethnologie, volume 20, page 65), but at that time I was uncertain as to its true significance. It is sign language for "to eat". When we traveled in Huaxteca, a district inhabited in old times and down to the present day by a nation whose language shows them to be nearly akin to the Mayas of Yucatan, the invitation to eat, Vamos á comer, was invariably accompanied by a gesture in which the hand, bent in the style of the glyph Manik, was repeatedly carried to the mouth. This symbol was taken as the glyph for Manik, "deer", because the deer was regarded as "meat" *κατ' ἐξοχὴν*, "that which is eaten". In Maya "to bite", "to eat", and "to be bitten", "to be eaten", is chi. The glyph *c* would accordingly be read chikin, and this is well known to be the Maya word for the cardinal point west.

The other two glyphs of the cardinal points, *b* and *d*, figure 1, are not phonetically constructed. In *d* we have the same element that we have already seen in *i*, *k*, and *l*, the glyphs Yax and Yaxkin, and which, as I stated, denote "tree". We see it here surrounded by figures which are to be explained as smoke or fire. Therefore *d*, figure 1, must be the region of fire, the south. Glyph *b* shows us a head and a jaw, the two not infrequently combined as if the head were being drawn into the jaw (*i* and *k*, figure 3). Occasionally an eye, looking toward the head, occurs as a variant of the jaw (see *l*, figure 3, in the manuscript Troano codex, page 24**a*). Finally, the hieroglyph *m*, figure 3, occurs (manuscript Troano codex, page 20**c*) for the hieroglyph *b*, figure 1; instead of the head drawn into the jaw we have a head held or lifted up by an open hand. The symbolism is clear. It is the live devouring earth mouth, the underworld, which, as we know, was located by the Mexicans in the north. In Aztec the north is called mictlampa ("the direction of the realm of the dead").

Analysis of the hieroglyphs thus leads to the same result as that which our study of the Cortes codex, pages 41, 42, suggested, that the hieroglyphs *a* to *d*, figure 1, are indeed to be coordinated in the way already stated by Schultz-Sellack—that is, that *a* to *d*, respectively, denote the east, north, west, and south.

Here we do indeed encounter a difficulty which must be overcome before we can with any confidence profit by the knowledge thus far acquired. Schellhas has already (Zeitschrift für Ethnologie, volume 18, page 77) drawn attention to the hieroglyphic elements *t* to *w*, figure 1, which are coordinated with the cardinal points in such a way that, according to the cardinal point, they form the variable constituent of a hieroglyph otherwise similarly constituted. Thus, in the Dresden manuscript, pages 30*b* and 31*b* and pages 29*c* and 30*c*, the hieroglyphs *n* to *q*, figure 1, are invariably combined with one of the hieroglyphs of the four cardinal points. And so, too, on pages 30*c* and 31*c* we see the same elements of *t* to *w* (always changing with the cardinal points) forming part of another hieroglyph otherwise not clear. Finally, the same elements are (Dresden manuscript, pages 31*b* to 34*b*) added to the principal glyph of Chac itself and combined with the same cardinal points. I have already suggested in my earlier work (Zeitschrift für Ethnologie, volume 20, page 4) that these hieroglyphic elements changing with the cardinal points are meant to denote colors. We know that the Mexicans, like the Mayas and many other American nations, ascribed certain colors to the cardinal points, and that the objects or beings whose various forms were supposed to reside at the different cardinal points were distinguished by the color appropriate to the cardinal point in question.

Thus in Landa, in speaking of the xma kaba kin ceremonies, according to the year—that is, according to the respective cardinal point—a yellow, red, white, and black Bacab, a yellow, red, white, and black Uuayayab, a yellow, red, white, and black Acantun is mentioned. But if this be the case, then the element of *w*, figure 1, must denote the color ek, "black". For in both the above-mentioned passages of the Dresden manuscript the rain god (Chac) is represented in black color below the glyph provided with this element (while he is left white elsewhere). The element *v* (same figure), on the contrary, is most probably to be described as expressing the color zac, "white", for it forms the characteristic element in the glyph of the month name Zac, *h*. The element *u* may be taken to express chac, "red", for it forms the characteristic element in the glyph of a goddess, *m*, a companion of Chac, who is represented in the Dresden codex, pages 67*a* and 74, in red color and with tiger claws. Finally, the glyph *t* (same figure), seems as if it must be intended for kan, "yellow". This is proved by the similarity of the element to the figures by which gold, the yellow metal, is represented in Mexican glyphs; also by the fact that, in conjunction with the element "tree", it is used to denote honey and honey wine (*n* and *o*, figure 3), and that it appears vicariously for kin, "sun", and is sometimes replaced by the hieroglyphic expression for the latter. According to this, indeed, we should have the four colors, yellow, red, white, and black, in *t* to *w*, figure 1, and in the same order of succession as they are given by Landa for the four cardinal points.

But these elements, which I call kan, chac, zac, and ek, are not, in the above-mentioned passages, as we should suppose, assigned to the east, north, west, and south, but, in the same way as Landa—though, as we must assume, incorrectly—refers the variously colored Bacabs and their years to the cardinal points, they are assigned to the south, east, north, and west. I must confess that this fact disturbed me for a long time, until it gradually became clear to me that in this instance other ideas were decisive in referring the rain god, Chac, to the cardinal points, and hence other colors were necessarily chosen to express that reference than those chosen for the Bacabs prevailing in the different years. Wherever the Bacabs themselves and the different years and the ceremonies performed before the beginning thereof are represented in the Dresden manuscript, especially on the familiar pages 25 to 28, there the elements of figures *t* to *w* are not coordinated with *d*, *a*, *b*, *c*, but with *a*, *b*, *c*, *d* (figure 1)—that is, actually with the east, north, west, and south. This can not, indeed, be noted on all four pages, the upper parts of 25 and 27 being unfortunately too far destroyed. But we can still see that on all four pages in a certain place on the upper part there was a pervading hieroglyph, which contained the elements of *t* to *w* as a variable constituent part. The same is retained on two pages, 26 and 28 (see *r* and *s*, figure 1), and there we actually see that the elements of *u* and *w*—that is, as I assume, red (chac) and black (ek)—are allotted to the north and south. That yellow (kan, *t*) and white (zac, *v*) are also correspondingly arranged is, I think, as good as certain. And these assumptions are confirmed by corresponding passages in the Troano codex. There the various Chacs are represented, pages 30 and 29*b*, beginning with that of the west, *c*. And the elements ek, kan, chac, zac answer to the directions of *c*, *d*, *a*, *b*. On pages 31 and 30*d*, on the contrary, the various Bacabs are represented, beginning with that of the east (chac and hobnil). And here, as comparison with the Cortes codex, pages 41 and 42, show the elements kan, ek, zac, chac correspond to the directions of *a*, *d*, *c*, *b*—that is, east, south, west, north. Thus, that which I think I have discovered in regard to color nomenclature agrees with the old Schultz-Sellack idea that *a* to *d* represent hieroglyphically the cardinal points east, north, west, south, or likin, xaman, chikin, nohol.

Now if we turn with this, as I believe, certain knowledge to pages 25 to 28 of the Dresden manuscript, on which the various years are represented and the ceremonies performed before the beginning of them, in the xma kaba kin, I have still another exception to make. There is an error in these pages. In the lowest row of hieroglyphs, the very one which contains the hieroglyphs of the various cardinal points, north and south, xaman and nohol, *d* and *b*, are transposed. It is obvious that this is an error. Nowhere else in this manuscript do we find the order of succession *a*, *d*, *c*, *b*. Only in the carelessly drawn Codex Troano-Cortes do we meet with a couple of inversions of the true order. So we find in Troano codex, page 36, where, however, there seems also to be an error, for the series goes on afterwards in the proper direction. And so, too, in Troano codex, pages 30 and 31, we have a reversal of the order, as the succession of the colors kan, ek, zac, and chac shows. But these are exceptions. As a general thing the order of succession of the years follows the correct order also in the Troano codex. If we make these corrections in pages 25 to 28 of the Dresden manuscript, we have on these pages, as is fit, beginning with the east, the years answering to the east, north, west, and south—that is, therefore, according to the books of Chilan-Balam, the Kan, Muluc, Ix, Cauac years. But we look in vain for the signs for these years on those pages. On the front of those pages, on the other hand, two successive day signs are repeated thirteen times, which can hardly be anything but the last day of the old and the first day of the new year. We have on page 25 Eb (XII) and Been (XIII); on page 26, Caban (XVII) and Ezanab (XVIII); on page 27, Ik (II) and Akbal (III), and on page 28, Manik (VII) and Lamat (VIII). It therefore follows, according to the Dresden manuscript, that the years corresponding to the east, north, west, and south—that is, the later Kan, Muluc, Ix, and Cauac years—must have begun with the days Been, Ezanab, Akbal, and Lamat; that is, with the Mexican characters Acatl, Tecpatl, Calli, and Tochtli. This is precisely what we learn from the date 4 Ahau, 8 Cumku, and the other dates combined from figures, signs, and statements in regard to months.

In one of my first works, in which I stated the result of my Maya studies (Zeitschrift für Ethnologie, volume 19, Verhandlungen, pages 224 to 231), I attempted to identify the deities represented on pages 25 to 28 of the Dresden manuscript with the deities mentioned by Landa in connection with the X̃ma kaba kin ceremonies. I think my inferences at that time were perfectly correct. But because I did not read the hieroglyphs of the cardinal points aright, and because I had no knowledge of the circumstance set forth above, namely, that the Kan, Muluc, Ix, and Cauac years begin with the days Been, Ezanab, Akbal, and Lamat, I was forced to make the somewhat bold conjecture that the names given by Landa were probably to be applied to the figures in the Dresden manuscript, but not in the order Kan, Muluc, Ix, and Cauac, as Landa reckoned the years, but in the order Ix, Cauac, Kan, and Muluc, as they appear in the Dresden manuscript. This conjecture is now wholly superfluous. The Dresden manuscript does, indeed, reckon the years precisely as Landa does, that is, beginning with the east, but the years which Landa designates by the dominical letters, Kan, Muluc, Ix, Cauac, are here specified by the initial days Been, Ezanab, Akbal, and Lamat. The chief figure on the first page is a god with a remarkable branching nose, whose principal hieroglyph is *a*, figure 3, a hieroglyph which otherwise serves to designate the lightning animal, the heavenly dog darting from the clouds. Instead of the latter, *e* (same figure), that is, the head of Chac, appears as the principal hieroglyph in the Dresden codex, page 3. It is therefore obvious that this god is a god of rain and thunder. Landa mentions in the Kan year Bolon Zacab, a name which is not

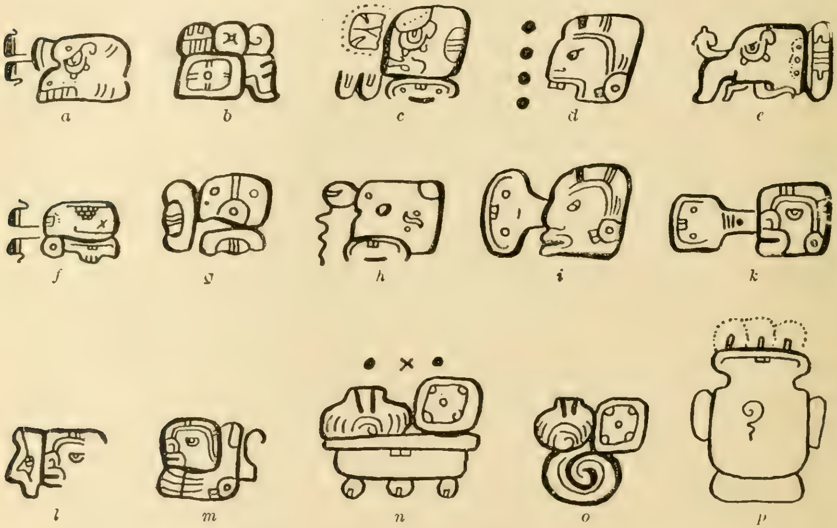


FIG. 3. Symbols from the Maya codices.

known elsewhere. But he also states, and that only of the Kan years, that they are said to be rich in rain.

On the second page (26) of the Dresden manuscript the chief figure is a god who has the sign kin written on his eyebrow, and whose chief hieroglyph, *b*, figure 3, likewise contains the sign kin. This agrees with Landa's statement, who, in the Muluc years, mentions Kinchahau, the "Lord with the sun face". On the third page the old god is represented, whose chief hieroglyph is *c*, figure 3. This again agrees with Landa, who mentions the god Itzamna in the Ix years. And on the last page (28) of the Dresden manuscript a death god is designated by the hieroglyph *d*, the face with gaping jaws; elsewhere written also in the form of glyph *h*. This, too, agrees with Landa, who calls the Uac mitun ahau of the Cauac years "Lord of six hells". I can not go into further details concerning these deities here, and refer the reader to my work quoted above. The two glyphs, which I have given in the plate accompanying this work (*f* and *g*, figure 3), are characteristic companion glyphs, *f* of Kinchahau and *g* of Itzamna. The former gives the idea of clouds or heaven, lightning, and fire; the latter may be translated as Ahtok, "Lord of the stone knife".

Now, how are we to understand this difference between the Dresden manuscript and Landa's assertions in regard to the first day of the year? Are we to assume that Landa was mistaken in making the Kan, Muluc, Ix, and Cauac years begin also with the days Kan, Muluc, Ix, and Cauac? Or shall we assume that at some particular period later than that of the composition of the Dresden manuscript a correction was made, in consequence of which the first days of the years ascribed to the east, north, west, and south no longer fell upon the signs Been, Ezanab, Akbal, and Lamat, but on the signs Kan, Muluc, Ix, and Cauac? I incline to the latter view, and remark that according to this the Troano and Cortes codices, which are only the two halves of one and the same codex, would belong to the later period. For on pages 23 to 20 of the Troano codex, whose meaning corresponds with that of pages 25 to 28 of the Dresden manuscript, on the front of the pages, not the initial days Been, Ezanab, Akbal, and Lamat, but likewise, thirteen times repeated, the days Cauac, Kan, Muluc, and Ix are found.

In spite of this variability of the beginning of the year the Maya races obtained a fixed chronology by reckoning, not the years, but the days, from a zero point. Thus the tonalamatl reckoning afforded a firm basis, which prevented any error.

Among the Cakchikels the zero point was furnished by a particular historic event, the destruction of the seditious race of the Tukuchee, which occurred on the day 11 Ah (11 XIII). By counting from this zero vigesimally—that is, by 20×20 days—they obtained periods which all began with the day Ah (XIII, or the Mexican Acatl), which successively took the numbers 11, 8, 5, 2, 12, 9, 6, 3, 13, 10, 7, 4, 1, and then again 11. Such a period was called a huna, and twenty such periods a may (see my communication in the Zeitschrift für Ethnologie, volume 21, Verhandlungen, page 475).

Among the Mayas the starting point was undoubtedly the zero point 4 Ahau 8 Cumku pointed out in the Dresden manuscript by Förstemann—that is, a day which bore the numeral 4 and the sign Ahau (XX, or the Mexican Xochitl), and was the 8th of the month Cumku, the last of the eighteen months of the year. But from this zero point the reckoning was not consistently vigesimal, but, as also follows from the computation in the Dresden manuscript set forth by Förstemann, by periods of 20×360 days. These periods, since their number is divisible by 20, had always to take the same sign Ahau (XX, or the Mexi can Xochitl). But as the figure 13 only goes into 7,200 with a remainder of 11, the figure of the first day of the period had to be two less than that of the first day of the previous period. In a word, the initial days of the successive periods of 7,200 days are 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau, 8 Ahau, 6 Ahau, and then again 4 Ahau. Such a period was called katun. It is still an open question upon what circumstances it depended that just such a period of 20×360 days was chosen. But, at any rate, this is the true length of the so-called ahau katun periods, whose computation is clearly stated in the Dresden manuscript, but whose meaning has been very much misunderstood even down to the present time.

In later times, when the connection with old traditions, if it had not entirely disappeared, had yet been impaired in many ways, the katun was taken, not as 20×360 days, but as 20 years. And thence it became evident that the periods could not begin in the way indicated, with 4 Ahau, 2 Ahau, 13 Ahau, etc., for the number 13 goes into 7,300 with a remainder of 7. Hence the initial days of the successive periods of 20 years (reckoning 365 days to a year) must by turns begin with 4 Ahau, 11 Ahau, 5 Ahau, etc. In order to meet this difficulty the theory was evolved that the katun consisted, not of 20 years, but of 24 years, for 24×365, or 8,760, is also divisible by 20, and the number 13 goes into it with a remainder of 11, as it does into the true katun, the period of 20×360 days. And hence arose the dispute, in which much ink and paper have been wasted, as to whether the katun consisted of 20 or 24 years. As a fact, it contained neither 20 nor 24 years (the old chroniclers did not take years directly into their calculation), but it contained 20×360 days.

Now that the relation of the tonalamatl to the other chronology has been made clear, I will once more turn back to the tonalamatl itself. In my work on the character of the Aztec and Maya manuscripts (Zeitschrift für Ethnologie, volume 10, page 1 et seq.) I tried to prove that even the apparently quite dissimilar and differently named 20 day signs of the Mayas could be brought into conformity with the linguistically and hieroglyphically distinct signs of the Mexicans. But I then overlooked one calendar, because it was not then accessible, or at least not intelligible, to me, namely, the Zapotec, which is recorded in the grammar of Father Juan de Córdova, which was—unfortunately, as it seems, very incorrectly and inexactly—republished a few years ago by Doctor León.

I have already mentioned that the Zapotec calendar is of an extremely ancient type. This is shown on the one hand by the ancient form of the words, which are hardly explicable by the language spoken at present or that recorded soon after the Conquest; also by the fact that the relation of the signs to the thirteen figures has become to some extent incrusted upon the form of the words used to denote the days. We can therefore detach a prefix from all of the names of the word, which is very nearly the same for all the signs connected with the same number. There are a few exceptions, which were perhaps due to an oversight or an erroneous conception on the part of the deserving monk who preserved this calendar for us or possibly are merely to be ascribed to the careless reprint. We have the following prefixes in the words combined with the various numbers:

1 chaga, or tobi, the prefix quia, quie.
2 cato, or topa, the prefix pe, pi, pela.
3 cayo, or chona, the prefix peo, peola.
4 taa, or tapa, the prefix cala.
5 caayo, or gaayo, the prefix pe, pela.
6 xopa, the prefix qua, quala.
7 caache, the prefix pilla.
8 xona, the prefix ne, ni, nela.
9 caa, or gaa, the prefix pe, pi, pela.
10 chij, the prefix pilla.
11 chijbitobi, the prefix ne, ni, nela.[a]
12 chijbitopa, or chijbicato, the prefix piña, piño, pinij.
13 chijño, the prefix pece, pici, quici.

Yet only a few of these various prefixes seem to contain any distinct meaning. Primarily the prefix quia, quie, which belongs to the signs connected with the number 1, which, as we know, took a special position, was regarded as the ruler of the whole following thirteen. Juan de Córdova says that these units of thirteen or their initial days were called cocij, tobi cocij, como decimos nosotros, un mes, un tiempo ("as we say, a month, a time"). But the four signs which preside over the first, sixth, eleventh, sixteenth 13 day periods, that is, the four divisions of the tonalamatl, were called cocijo, or pitào, that is, "the great". They were regarded as gods and were honored with sacrifices and bloodletting. Indeed, we find in the dictionary, for instance, tiempo encogido, en que no se puede trabajar ("special time in which no man can work")—cocij cogàa; tiempo de mieses, frutas ó de siego ó de algo ("season of harvests, fruits, or grain")—cocij collàpa, cocij layña, cocij; tiempo enfermo ó de pestilencia ("sickly season, time of pestilence")—còo yòocho, piyè yòocho, cocij yòocho. But the original meaning of cocij can hardly have been "time". The prefix co denotes a nomen agentis, and in a certain way corresponds to the Mexican prefix tla. Cocii means "when we have taken", hence something like the Mexican tlapoualli, and, like that, it denotes a unit of 20 days; cocii, "20 days in the past"—that is, 20 days ago to-day; huecii or cacii, "20 days in the future", or "in 20 days"; cacii-cacii, "every 20 days". If, therefore, the Father be correct in his statement, the application of the word cocii to a unit of thirteen days can only have been a transferred or an incorrect one. Cocijo, on the contrary, is in the dictionary translated by dios de las lluvias ("god of the rains"), and by rayo; tòtia péni quij cocijo by sacrificar hombre ó niño por la pluvia ("to sacrifice a man or a child for rain"); tàce cocijo, by caer rayo del cielo. In other words, cocijo is the rain god Tlaloc, who has his place here in the tonalamatl because the four divisions of the tonalamatl belong to the four cardinal points, and the rain god is at home in the four cardinal points and differs according to the respective cardinal point, as is plainly shown on the above-mentioned pages of the Borgian codex, page 12, and the Codex Vaticanus B, page 28. If we now inquire what the prefix quia, quie, might mean in speech, we find "to strike", "stone", "rain", "crime or punishment", "to color", "flower"; the first four, however, are to be distinguished from the latter by special pronunciations of the *i*. If we substitute for "rain" "thunderstorm", which is usually about the same thing in these regions, then the first four meanings are readily evolved, one from the other, and if we take this as the meaning of the prefix quia, quie, we must translate quia-chilla, for instance, as "the crocodile Tlaloc", the Tlaloc who bears the crocodile as his sign, or ce Cipactli (1 I).

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[a] This is the most common prefix, although the exceptions here are more frequent, and the confusion particularly great.

Of the other prefixes only the last two seem to have any special meaning, which perhaps proceeds from the special augural value of the numerals 12 and 13. Piici means "the omen", usually, it is true, the evil omen. Piño might be a secondary form of chiño, for p and ch frequently stand one for the other in Zapotec word forms. Chiño, chijnno means "full", "luck", "blessing", "riches", "thirteen", "fifteen". But these are all meanings which can hardly be brought into relation with the numeral 12, to which the prefix piño refers. The other prefixes seem to be only variations of the well-known prefixes pe, pi, co, hua, by which people in action and living beings are designated. The syllable la is demonstrative.

If we set aside these prefixes, changing with the numeral attached to them, we obtain the word chilla or chijlla for the first day sign. I find the three principal meanings for this in the dictionary to be: first, "bean dice", pichijlla, frisolillos ó havas con que echan las suertes los sortilegos ("beans with which sorcerers tell fortunes"); then, "a mountain ridge", pichijlla, lechijlla, chijllatani, loma ó cordillera de sierra; also, "the crocodile", pèho pichijlla, pichijlla-pèóo, peyóo, cocodrillo, lagarto grande de agua, ("crocodile, great water lizard") and "swordfish", pèlla-pichijlla-tào espadarte pescado; finally, chilla-tào ("the great chilla"), is also given as one of the names of the highest being. Here the meaning "crocodile" seems to me to be the original and suitable one. For the way in which the first day sign is drawn in Mexican and Zapotec picture writings, as *a*, figure 4, obviously indicates the head of the crocodile, with the upper jaw moving independently, opening upward, which is a characteristic feature of this creature. The interpretations of Sahagun and Durán for cipactli, "swordfish" and "snake's head", are therefore to be rejected, although the former is certainly contained in the Zapotec word. The Indians of the high valleys of Mexico, the informants of both those historians, were not familiar with the original of the true cipactli, either from personal observation or through reliable traditions. The other meanings, "mountain range", "range of peaks", and again, "swordfish", are easily derivable from the first meaning "crocodile". But it is more difficult to find any transition to the meaning "lot beans". Yet one does, I think, exist. The tonalamatl beginning with cipactli was the epitome of all augural skill. It is not too bold to accept the theory that the name was therefore transferred also to the tool of the augurs, the bean, which the soothsayers employed in conjunction with the tonalamatl. Among the Mayas, the lot bean was called am. During the festival in the month Zip magicians and physicians had

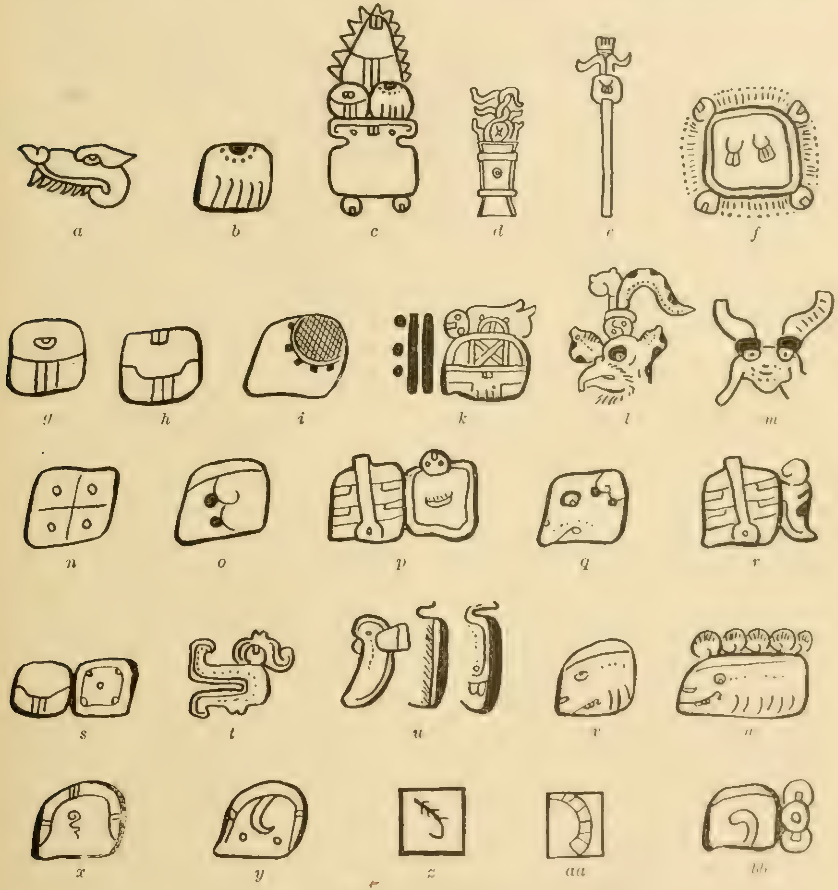

FIG. 4. Day signs and related glyphs from the codices.

this painted blue, that is, consecrated. Now, it does not seem to me improbable that the words imix, imox, by which the Mayas and the Tzental-Zotzil called the first day sign, should be connected with this word am. I should even like to trace the Mexican word amoxtli, "book", otherwise very hard to be explained etymologically, back to these Maya roots. The Maya hieroglyph Imix (*b*, figure 4) is very frequently associated with the hieroglyph Kan, and we often see this group among the gifts offered to the gods, as at *c*. It may perhaps signify "beans and corn".

With the second day sign, not one, but two different words remain after the removal of the prefix—the two words quij and laa, which both, however, mean the same thing, not "wind", as we might suppose from the Mexican second day sign, Ehecatl, but "glow" or "fire". This is an exceptionally noteworthy fact, for it explains the part which we see the second day sign play in the Maya manuscript. In Maya and kindred languages the second day sign invariably bears the name Ik, properly speaking i'k, that is, "wind". But wherever it occurs in pictures or hieroglyphs it gives the idea of flame or fire. So it does in *d*, figure 4, from the Dresden codex, page 25, where we see it in the center of the flame flashing up from the fire vessel; in *e*, figure 4, where it is borne on a staff; and in the hieroglyph of the sun god, *b*, figure 3, which is composed of the picture of the sun, an element which signifies "winged", the sign Been, which signifies the woven mat and the woven straw roof, and the sign Ik, which in this combination can only signify the fire applied to the roof. In Cogolludo, the word Kakupacat, "fiery glance", is given as the name of a god of war and of battle, and it is said of him: Fingian que traia en las batallas una rodela de fuego, con que se abroquelaba ("He was supposed to carry a wheel of fire in battle, with which he defended himself"). Now, in the Troano codex, page 24, and in the Dresden codex, page 69, the black Chac is represented with spear and shield, and the latter (*f*, figure 4) has the sign Ik upon its surface. No doubt this is the fiery shield, and the black Chac is Kakupacat, related to Cit-chac-coh, in whose honor warriors danced the war dance (holcan okot) in the month Pax. This union of wind and fire, which thus presents itself in the Zapotec name and the Maya image of the second day sign, is also probably the best explanation of the dual nature which seems to belong to the wind god Quetzalcoatl, who now appears simply as a wind god, and again seems to show the true characteristics of the old god of fire and light.

In the third day sign, after removing the prefixes that vary with the numeral attached, we obtain the forms guela, ela, and ala or laala. Here guela and ela are well-known, much-used words for "night"; queèla or gueèla, "night"; te-èla, "by night"; te-chij te-èla, "by day and by night"; xilo-èla còlo-èla, "midnight". The form ala or laala seems to have been no longer in use when Juan de Córdova took up the language. We shall also find further on that the vowel a is preferred to the later e in the names of the day signs. In calling the third day sign by the name of the night, "the dark house of the earth", varying from the Aztec calli, "house", the Zapotec calendar agrees with that of the various branches of the Maya family.

In the fourth day sign we obtain, after removing the prefix, the forms gueche, quiche, ache, achi, ichi. The sign corresponds with the Mexican Cuetzpalin, "lizard". Picture writings show us a lizard-like animal with a tail, usually painted blue, and translators state that the sign signifies "abundance of water". Now it is really hard to understand why the lizard, which is usually found on stones and walls heated by the sun, should be taken as the symbol of abundant water. The Zapotec word forms seem to solve this difficulty, for they are to be translated by "frog" or "toad". The dictionary gives pèche, peèche, beèche: todo género de rana ó sapo. Here pe only occurs as a prefix, which we find in almost all animal names in the form pe or pi. And that eche is equivalent to the ache, achi, ichi of the calendar is proved by comparison with the fourteenth day sign, where are found the same forms, gueche, ache, eche, used for the jaguar, which is described in the dictionary as pèche-tào, "the great pèche". But, just as in the first day sign the Zapotec word suggested to us a possibility of harmonizing the apparently incongruous Mexican and Maya glyphs and their designations, so here in the fourth day sign this seems also to be the case. Pèche in Zapotec means literally maize kernel, not the simple ripe kernel, but the kernel roasted and, in consequence of the roasting, popped. We know that these grains of corn, which the Mexicans called momochtli, played a great part in offerings to the gods. It is even stated every time how many such grains of corn were used for the drink which was offered to the procession of participating priests and chieftains in Yucatan during the xma kaba kin ceremonies. The Maya name for the fourth day sign is Kan, which probably goes back to kan or kanan, cosa abundante ó preciosa ("an abundant or precious thing"). I have given the most characteristic forms of the hieroglyph in *e*, *g*, and *h*, figure 4. They contain in the upper portion either the teeth (as on the mouth of the vessel in *e*, figure 4, and in the glyphs of *d*, *h*, *i*, and *k*, figure 3, and *b*, figure 1, pages 30 and 36) or the eye, both of which, as I have already explained above in regard to the hieroglyphs of *b*, figure 1, and *i*, *k*, and *l*, figure 3, convey the idea of the opening of the chasm. In the lower part of the Kan hieroglyphs, below the waving diagonal line, we have also a pair of teeth, which, like the teeth in the upper part, are left white if the hieroglyph is done in colors. They are also most naturally to be conceived of as indicating a chasm. If we add to this that the hieroglyph when it is colored is invariably painted yellow, that is, the color of the outside of the kernel of corn, we must admit that the hieroglyph Kan does indeed correspond to the ideas which the popped corn suggests. And, indeed, the part which the hieroglyph plays in the pictures of the Maya manuscripts is of such a nature that all authors have hitherto spontaneously agreed in explaining the glyph Kan as "maize." I myself formerly took the corncob, which we sometimes see represented with teeth and eyes, to be Kan, because I did not think of popped corn; but I can now let this explanation drop, because the word pèche and the ideas connected with it afford a satisfactory solution of the peculiar characteristics of the hieroglyph.

For the fifth day sign the Zapotec calendar gives the roots zee, zij, which, again, are not, as we might suppose from the Aztec name for the fifth day sign (Coatl), to be translated "snake" (snake in Zapotec is pella or bela), but which seem to mean something abstract, namely, "misfortune", "evil", "trouble", "misery". In one place in the calendar, and that precisely in the first 13-day period, the word ciguij is used instead of zee, zii; and that means "deceiver", "layer of snares, who brings one into trouble". If we consider these variants, we can, as I believe, ascribe a more pregnant meaning to zii, one that is contained in the word pijci (pijze, peezi), undoubtedly derived from this root, which is, "harmful portent". Thus we arrive by a roundabout way at the same conception which the Aztec name for the fifth day sign suggests to us, namely, the word "snake". For it was this that the Zapotecs held to be the first and most serious of all evil portents: Tenian estos Zapotecas muchas cosas por agüeros, a las quales si encontraban ó venian á sus casas ó junto á ellas, se tenian por agorados dellas. El primero y mas principal era la culebra, que se llama pella, y como ay muchas maneras dellas, de la manera que era ella, assi era el agüero, esto deslindava el sortilegio ("These Zapotecs held many things to be omens, and if they met these things or if these things entered or approached their homes they held it to be an evil omen—that they would bring them misfortune. The first and chief was the viper, which is called pella, and as there are many sorts of them, according to the sort, so was the omen; this outlined the enchantment"). (Juan de Córdova, Arte, page 214, 1886.) In my paper on the character of the Aztec and Maya manuscripts (Zeitschrift für Ethnologie, volume 20, page 61) I show that the Maya glyph for the fifth day sign (*i*, figure 4) is derived from certain peculiarities of the snake and undoubtedly denotes the snake. But the meaning of the word by which the Mayas designated that day, namely, Chicchan, was not quite clear to me. I have now no doubt that it means chic-chaan, that is, tomado señal, tomado agüero ("signal-bearer, portent-bearer").

For the sixth day sign the Zapotec calendar gives the word form lana or laana. Of the various meanings which the dictionary suggests for this root the one which I should think the most natural, if there were no other points of comparison to be considered, would be "the hare" (pèla-pillàana, liebre animal; too-quixe-pillaana, seu pèlla pillaana, red para liebres, "net for hares"), the more so since we have already encountered frogs and snakes, and in the list of day signs yet to come are to meet with the deer and rabbit, and, as Juan de Córdova expressly says in his remarks on the calendar: Y para cada treze dias destos tenian aplicada una figura de animal, s. aguila, mono, culebra, lagarto, uenado, liebre ("And to every thirteen days the figure of an animal was assigned—eagle, monkey, snake, lizard, deer, hare"). But in opposition to this is the fact that both in the Mexican calendar and in that of the Maya races we find the picture of death in this place, and that, except only among the Tzental-Zotzil, this day sign is also designated by the name of "death." Since in the other signs we invariably find some direct or indirect agreement among these three calendars, we must look about to see whether we can not find some transition in the case of this sign also from the word given in the Zapotec calendar to the meaning given in the other calendars. We might first consider that pillàana, "hare", is invariably associated in the dictionary with pèla, "flesh", something as when we speak of the hare as "game"; and that làna is also "fresh, raw meat"; hualàna nalàna, cosa que hiede á carne ó carnaza ("a thing which smells like flesh or hide"); tillàa nalàna, heder algo á carnaza ("anything to smell like hide"). We might therefore think of the freshly killed game. But làna also means "veiled", "concealed", "dark", "secret". And I believe we should take this meaning here, the more so as from this meaning the remarkable name Tox, which the sixth day sign bears in the Tzental-Zotzil calendar, seems to find an explanation. I have already, in my earlier work, connected this name with Coslahun tox, mentioned by Bishop Núñez de la Vega among the Tzental-Zotzil: El demonio segun los Indios dicen con trece potestades le tienen pintado en silla y con astas en la cabeza como de carnero ("The demon, whom the Indians say has thirteen powers; they paint him seated and with horns on his head like a ram"). But I had not then the true conception of this demon.

Coslahun tox is undoubtedly Oxlahun-tox, and this in Maya would be Oxlahun tax, as the Maya month Mac is Moc in Tzental-Zotzil. But Oxlahun tax means the "thirteen plains", and is apparently nothing else than the oxlahun taz ("the thirteen beds or strata") that is, the oxlahun taz muyal ("the thirteen layers of clouds"), which are invoked in the blessing of the fields (tich, misa milpera), noted by Brasseur de Bourbourg in the Hacienda of Xcanchakan. In other words, the demon Coslahun tox is nothing else than the cloud spirit Moan,[a] in whose glyph (*k*, figure 4) we find the thirteen layers or coverings indicated, and whose picture (*l*, *m*) might readily create in the Bishop's mind the conception that the demon was represented with horns, all the more so because the monks were apt to see devils everywhere in the figures of aboriginal mythology and to imagine the devils very realistically with horns. We should therefore translate the Tzental-Zotzil name tox by "covering", "veil", "strata", "cloud covering". And then it is a striking coincidence that we also find the Zapotec word for the sixth day sign used, alone or in combination with pèe or zàa, for "cloud". Compare pèe-làna-tào-pèye or pèe-zàa-làna-tào-nagàce, nube negra y oscura (literally, "great fog cloud", "great black cloud"), zaa-quiepàa, pèe-zàa, zee-làna-tào-yàti, nube blanca. From the idea of "covered", "dark", might readily be evolved that of death, by whose name the sixth day sign is denoted in the other calendars. Indeed, Moan, the cloud spirit, also appears in the Maya manuscript, invariably accompanied with the symbol of death.

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[a] Seler, Charakter der Aztekischen und der Maya-Handschriften (Zeitschrift für Ethnologie, v. 20, p. 91).

It is as easy to decipher the seventh day sign as it was hard to read the sixth. By removing the prefix we get the name china, and this is exactly the Mexican mazatl, "deer", given in the Mexican calendar, and the queh, quieh, given in the Guatemalan calendar, as the seventh day sign. In my earlier work I strove to show that the Maya glyph for the seventh day sign also agrees with this. The real meaning is, as I stated on page 32, "to eat", "food", "meat". The Maya word manik is possibly may-nik ("cloven hoof").

For the eighth day sign, which answers to the Mexican Tochtli, "rabbit," we obtain, after removing the prefix, the word làpa. Now, there is no such word as làpa, "rabbit"; but the designations which are used for "rabbit" lead to the same idea which is contained in làpa. Làpa means "to divide", "to break in pieces", and the rabbit is pèela or piteeza, both of which words mean "the divided", "that which is cut up (carved)". That the idea of something divided, cut up, underlies the name of this day sign is also proved by the Maya hieroglyph for the same (*n*, figure 4), in which the idea of divided, cut up, is clearly indicated. Perhaps the expressions Lambat and Lamat, which are used in Tzental-Zotzil and in Maya for this day sign, and which can hardly be explained from the well-known Maya roots, may also be traced back to this underlying Zapotec làpa.

The ninth day sign is in Mexican atl, "water". The Zapotec calendar gives the words niza and queza. The former is the familiar and generally used Zapotec word for "water". Various derivatives show that queza is only a variant of niza—pequeça, peniça, or piniça, milano ave; quìe-càche-niça, quie—quèça, marmol, piedra marmoleña ("marble, marble stone"). Both are probably derived from èzaa ("to come down").

For the tenth day sign the Zapotec calendar gives the word tella; the Mexican has Itzcuintli, "dog". The Maya expressions for this day sign are obscure, but I proved in my earlier work that the glyphs *o* and *q* (same figure) stood for "dog". The dog plays an important part in Maya manuscripts. He is the lightning beast, who darts from heaven with a torch in his hand (see Dresden codex, page 40*b*). And the death-bringing significance of the dog is also set forth in glyph *p*, in which we find the vertebral column of a skeleton, as also in *r*, the hieroglyph of the month Kan-kin, the yellow, that is, the scorching sun high in the zenith. The dog shares this rôle of lightning beast in the manuscripts with two other creatures. One represents a beast of prey, unspotted, with long tail, a rather long head, and the sign Akbal over the eye, which is denoted in the Dresden codex, page 36*a*, by the principal hieroglyph of the tiger and also by *s*, a glyph, which is composed of the day sign Kan and the glyph kan, "yellow", and therefore probably denotes the yellow beast. I think that it is meant for the lion or jaguar (coh), which is also, for instance, in Zapotec, described as "the yellow beast of prey" (pèche-yàche). The other creature has a head with a proboscislike, elongated snout, *t*, and hoofs on its feet; it is glyphically described by this same head and also by glyph *u*, which is composed of an ax, a feather, and the abbreviation of a head, or the sign uinal ("a whole man")[a]. I take this creature to be tzimin, ("a tapir"). We know that Central American nations connected the tapir closely with the deities of the four cardinal points. We are told of the Itzaex at Peten that they worshiped an idol "de figura de cavallo (of the figure of a horse)", which bore the name Tzimin-Chac, Caballo del Trueno ó Rayo ("horse of the thunder or lightning") and was regarded by them as the god of thunder and lightning.

Núñez de la Vega says of the great god Votan at Chiapas: Que en Huehueta, que es pueblo Soconusco, estuvo, y que alli puso dantas y un tesoro grande en una casa lóbrega, que fabricó á soplos. ("That he was at Huehueta, which is a village of Soconusco, and that there he placed tapirs and a great treasure in an obscure house which he erected in an instant.") Certainly, the conception of the tapirs supporting the heavens and the words for it have penetrated even into Mexico. The six tzitzimimê ilhuicatzitzquique, angeles de aire sostenedores del cielo que eran, segun decian dioses de los aires que traian las lluvias, aguas, truenos, relámpagos y rayos y h̃abian de estar á la redonda de Uitzilopochtli ("angels of the air, upholders of the heavens: they were, as we are told, gods of the air, who brought the rain, waters, thunder, lightning, and sunbeams, and must have been in the neighborhood of Uitzilopochtli"), which Tezozomoc mentions, are nothing else but the plural forms of tzimin, "tapir", constructed according to the rules of the Mexican tongue. From it, indeed, inversely, a singular form, tzitzimitl, which is the title of a particular warrior's dress combined with a skull mask, is derived. And if the rain god Chac is distinguished in the Maya manuscript by a peculiarly long nose, curving over the mouth (see the hieroglyph in *e*, figure 3, page 36), and if in the other form of the rain god, to which, as it seems, the name Bolon Zacab belongs, the nose widens out and sends out shoots, I believe that the tapir, which was employed identically with Chac, the rain god, furnished the model for this also.

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[a] Seler, Ueber die Bedeutung des Zahlzeichens 20 in der Maya-Schrift (Zeitschrift für Ethnologie, v. 19, Verhandlungen, pp. 238, 239).

The tapir is called in Zapotec pèche-xòlo, and the native hairless dog pèco-xòlo. Dog and tapir, then, the two animals darting from heaven, who carry lightning and thunderbolts in their hands, are brought together here in the common designation xolo. This word Xolo itself is the familiar name of a demon, the demon Xolotl, who rules over the sixteenth week (Ce Cozcaquauhtli), and the seventeenth day sign (Olin), and who is represented directly as a dog (Codex Vaticanus B, pages 4 and 77) or at least with the cropped ears of a dog (Borgian codex, page 50, and Codex Vaticanus B, page 33), and who is distinguished as the deity of air and of the four directions of the wind by Quetzalcoatl's breast ornament, and by the fact that the four colors, symbols of the four cardinal points, and the sign naui olin ("the four movements"), are represented close beside him. There is therefore no doubt that this demon is to be considered as equivalent to the beast darting from heaven of the Maya manuscript. The spirit Xolotl is usually described by translators as the "god of abortions". He is actually also depicted in the Borgian codex, page 27, as crooked-limbed and blear-eyed. And in Mexico all sorts of mongrel figures, which were regarded as abortions, were described by the word Xolotl.

If we now return to the word tèla, by which the tenth day sign is denoted in the Zapotec calendar, it appears that we can find no meaning for it if we simply employ the word "dog", corresponding to the Mexican itzcuintli, but that the word at once becomes intelligible if we think of the dog darting from heaven, as represented in the Maya manuscript. For tèla is tèe-lào, boca abajo, "with the head down", hence answering to the Mexican Tzontemoc. The contracted form tela occurs in Zapotec in various derivatives, such as ti-tela-nii, used of the kicking out behind of animals; tinñij-natèla, "to hold perverse speech"; totela, "to shake the dice from the cup (with its mouth downward)"; quela-natela-lachi, "confusion (when everything is upside down and topsy-turvy in our minds)."

For the eleventh day sign the Zapotec calendar, after removing the prefix, gives the form loo or (in 1 XI) goloo. This answers to the Mexican Ozomatli, "ape", for the vocabulary gives pillào, pillèo, pillòo gònná, mona animal (gònná is only the feminine designation). I have shown in my former work that the other calendars, as well as the Maya glyphs of this day sign, agree with this meaning.

For the twelfth day sign the Zapotec calendar gives the form pija.

But when it is combined with the numeral 1, where we should expect to find quia pija or quiepija, qui cuija is given. It seems as if there must be some mistake here, and that we should read it quie pija or quie chija. Pii, chii means "to be turned". Thus pija corresponds exactly to the name (Malinalli) which the day sign bears in the Mexican calendar. But the name and the delineation of this sign are different in the Maya calendar. The name is ee or eb—that is, "a row of teeth", "a row of peaks". It is translated in the Guatemalan chronicle, as in the Mexican Malinalli, by escobilla ("brush"). This translation is undoubtedly correct. The escobilla is a broomlike or brushlike instrument, made of plant fibers bound together, which is still very generally used by the Indian women to clean their clothes and comb their hair (in Zapotec peègo). The brush is therefore the symbol of purification and the instrument of women. It is the attribute of the mighty goddess Teteoinnan, or Toci, the ancient earth goddess, in whose honor the "broom feast" (Ochpaniztli)—that is, the feast of purification, or atonement for sin—was celebrated in the middle of the summer. The Maya hieroglyph for the twelfth day sign (see *a a*, figure 5) shows us the face of the ancient goddess, and behind it, as a distinguishing mark, the escobilla.

For the thirteenth day sign we find the word forms quij, ij, and laa. Quij means "the reed", corresponding to the name Acatl, which this day sign bears in the Mexican calendar and with which the Guatemalan title ah seems to agree. The Maya word been is obscure; but I have proved in my former work that the glyph Been refers to the same idea of the reed or, perhaps more accurately, to the woven reed roof, the woven reed mat. I do not find the meaning "reed" given in the dictionary for the word láa. As, however, in considering the second day sign ("wind", "fire") we found these same word forms, quij and laa, to be synonymous, it is probable that there was also a synonym laa for quij, "reed". Moreover, it is a remarkable coincidence that in the Maya text the glyphs of these two day signs, which have the same names in Zapotec, the glyphs Ik and Been, should most frequently occur in company (see *b*, figure 3).

For the fourteenth day sign, the Mexican Ocelotl, "tiger", the Zapotec calendar gives gueche, eche, ache, just as in the fourth day sign. As there in the words pèche, pèeche, bèeche, "frog" of the dictionary, we were able to prove an agreement with the Mexican name, so here the dictionary gives pèche-tào ("the great beast"), tigre, animal feroz. I have shown in my earlier work that the Maya glyph is also expressive of the tiger. The Cakchikel title, Yiz, that is in Maya h-ez, "the magician", is to be regarded as explanatory of the Maya name for this day sign (Ix), to my idea one more link in the chain of reasoning in favor of the theory that the system of day sign-became known to the Mayas through the medium of the kindred races of Chiapas. For a Tzental-Zotzil x frequently corresponds to the Maya z.

In the Zapotec calendar the fifteenth day sign had the form naa and, where it is combined with the numeral 1, quinñaa. The Mexican name is Quauhtli, "eagle", which is easily reconciled with the Guatemalan tziquin, "bird", but not so readily with the Maya word men and the Maya hieroglyph (*v*, figure 4). But here again the Zapotec name affords linguistic evidence of what I felt compelled to infer, in my earlier work, from the form of the hieroglyph. The Maya hieroglyph, *v*, shows an aged, wrinkled face. And we see this hieroglyph, lengthened out, decorated with pompons, *w*, applied in various ways pictorially and hieroglyphically, among others in the hieroglyph which usually accompanies the chief hieroglyph of the eagle. I decided at that time that the Maya hieroglyph represented the picture of the old earth mother, the universally adored goddess known as Tonantzin, "our mother", who goes about stuck over with the fine white downy feathers of the eagle, and who appears in the Vienna codex, under the name hieroglyph ce Quauhtli, or "eagle". Now the Zapotec name gives us the same, for naa, ñaa means "mother", a word which usually appears only with the prefix xi of genitive significance, because names of relationship were never used without an indication of possession.

The sixteenth day sign is designated in the Mexican calendar by the picture of the vulture (Cozcaquauhtli). The Maya races of Guatemala designate it as ah-mak, and this word also seems to denote the vulture, "who eats out eyes", "who makes pitlike excavations". The Zapotec word is loo, or guilloo. This indeed could not mean the vulture, but a different bird, the raven (pelào, balloo). The vulture in Zapotec is pellàqui (pelàhui, balai, baldai). Now it is not impossible that one and the same conception underlies both these titles. Lào, lòo, means "eye", "face", "front", "outside". Laqui, lahui, lai, means "set into the very midst", "between", "common", "public". But at any rate, the meaning which lies at the bottom of the root of pellàqui, baldai, "vulture", also occurs in the root loo. We have, for instance, xi-loo-eela, co-loo-eela, "in the middle of the night", "midnight"; loo-thòo, the "middle of the body", "breast", "trunk". Still a third bird is mentioned in the Mexican calendar, of the Cronica Franciscana of Guatemala, namely the tecolotl, "the night bird", "the owl". The idea of death forms a connecting link between the vulture feeding on corpses and the dark bird of night which is easily understood. So, too, in picture writings we often find the cozcaquauhtli and the owl used interchangeably.

The Maya hieroglyph, as I have already stated in my earlier work, gives rise to very different conceptions. It shows us (see *x*, figure 4) a figure which is invariably used in the manuscripts on the jugs from which the intoxicating drink mead foams (see *p*, figure 3, page 36), and which seems to be nothing but a somewhat conventionalized form of the yacametztli, the half-moon-shaped nose ornament of the pulque god, which is used on drinking vessels in Mexican picture writing.[a] The upper part of the hieroglyph shows the stripes usually employed for snakes, and seems to indicate the snake, which is often drawn winding about the wine jug. The name Cib also suits this conception, for ci is the maguey plant and is also used to denote the pulque made from it, as well as all other intoxicating drinks. Cib might therefore be formed with the instrumental suffix and mean “that which is used for making wine”, either the honey or, perhaps more correctly, the narcotic root which was added to the fermented drink. The Mexicans called this addition pàtli, “medicine”, from which the pulque god was known as Patecatl.[b] There is a connection between these conceptions and the Mexican name for the day sign (Cozaquauhtli, “vulture”), as I have already pointed out in my earlier work, arising from the conception of the vulture, “the bald-headed,” as the symbol of age, for the enjoyment of pulque, the intoxicating drink, was in Mexico granted to old age only. It now seems as if the Zapotec name for this day sign also fitted into the framework of these conceptions, for loo, loo-pàa, is the root, and may therefore correspond to the Mexican pàtli, the Maya cib, that is, the pulque seasoning. In German there is an undoubted etymologic connection between Wurzel (“root”) and Würze (“seasoning”). So I believe that the double meaning of the Zapotec name has perhaps more to do with the divergent representation and designation of the sixteenth day sign, as it appears in the Mexican and Maya calendar, than the connection of ideas which links the conceptions of vulture, baldness, old age, and pulque. If I am not mistaken, a divergent representation of this day sign is also actually expressed in the Maya hieroglyph. For we occasionally find a variant of it (*y*, figure 4) in which the distinguishing element is not the pulque symbol, but a feather, or perhaps the night bird itself, the owl (see *bb*, figure 4, one of the glyphs of the owl). This would also answer to the above-mentioned Guatemalan name for this day sign. The forms in the books of Chilan Balam (*z* and *aa*), also seem to indicate or reproduce a feather.

The seventeenth day sign in the Zapotec calendar is xoo. This corresponds exactly with the Aztec name for it, Olin, “motion”, for the Zapotec word xoo combines with the more general meaning “powerful”, “strong”, “forcible”, the special one “earthquake”:

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[a] See Veröffentlichung des Königlichen Museums für Völkerkunde in Berlin, v. 1, pp. 132, 133, and figs. 61, and 62, p. 169.

[b] In my article on “Das Tonalamatl der Aubin'schen Sammlung” (Compte rendu du septième session du Congrès international d'Américanistes, Berlin, 1888), I accepted the incorrect reading Pantecatl All the deductions based on this reading are therefore faulty.

xòo, xixòoní, temblor de tierra ("earthquake"); tixòo layòo, temblar la tierra ("for the earth to shake"); pitào-xòo, dios de los terremotos ("god of earthquakes"). And it is well known that in Mexican picture-writings on historical subjects, as those in Codex Telleriano-Remensis and Codex Vaticanus A, the sign Olin—usually, to be sure, in connection with the brown and black dotted stripes, which signify the earth or the tilled field—is generally used to denote a coming earthquake, as the verb olini is especially used of earthquakes: auh in tlalli olini (Olmos).

But if this is the original meaning of olin, we shall likewise have to search for a similar first conception for the hieroglyph by which the seventeenth day sign is known in the Maya manuscript. And, in fact, the very name which the day sign bears in the calendars of the Maya races points to this fundamental conception. The Tzental-Zotzil word chic means "to shake". The Guatemalan word noh means "great", "powerful", answering to the original meaning of the Zapotec xòo. The Maya name caban means "that which is brought down", "that which is below", that is, "earth", "world". The root cab has a still more pregnant meaning: in Charencey's vocabulary it is translated as terrain volcanique, that is, "earthquake region". In a broader sense it is also used for "earth", "world". And if the same root, cab, also means "excretion" and "honey", miel, colmena, ponzoña de insecto, untuosidad de una planta ò fruta, ("honey", "beehive", "venom insect", "juice of a plant or fruit"), then the intermediate idea is, it seems to me, that of dripping down.

The forms of the hieroglyph Caban (*a*, figure 5) are very much alike. But I did not recognize the real meaning in my earlier article. The hieroglyph contains an element which forms the characteristic constituent of the glyph of the young goddess Chibirias, or Ixchebelyax, who, as I think I can prove, takes the name Zac Zuhuy, "the white virgin", a name which we also recognize in Zac Ziui, the Bacab of the Ix year, mentioned by Landa. It is evident in the hieroglpyh of this goddess (*b* and *c*, same figure) that the element which forms the distinguishing constituents of the hieroglyph Caban is meant to represent a part of the dark tuft of hair, with the long, waving, whiplike strands which give the whole figure of the goddess, where she is drawn in full, so characteristic an appearance. According to this we should conceive of the hieroglyph Caban merely as an abbreviation of the hieroglyph of this goddess, and thus recur to the same meaning which I have already derived from the Zapotec word xòo, namely, "the earth"; for Ixchebelyax, the young goddess, is only another form of the earth goddess, who occupies the same position in regard to the old earth mother Ixchel that Xochiquetzal does to Tonantzin among the Mexicans. I find a striking proof of the accuracy of this conception of the hieroglyph Caban in the fact that this hieroglyph appears homologously with the hieroglyphic men (*e*, figure 4), which, as I stated above, is the picture of the old earth goddess, the earth mother, Ixchel, or Tonantzin (compare the two forms *g* and *h*, figure 5, which are used for the bee flying down, in Troano codex, page 9**a*).

And, finally, this conception of the sign Caban also agrees very well with the part played by the hieroglyph Caban in the compound hieroglyphs in the Maya manuscript; for this element forms an essential constituent in all hieroglyphs which symbolize the word "below" or "descent from above". Thus in the hieroglyph of the fifth cardinal point (*e* to *g*, figure 1), which denotes the center; in the hieroglyph of the bee (*e* to *h*, figure 5), which represents an insect swooping down from above; in the hieroglyphs (*l* to *n*, figure 5) which illustrate pouring from a jug or wine skin; in the hieroglyph *o*, which denotes the felling of the tree; in the snake formed by the sign Caban, upon which, in the Dresden codex, page 30*a*, the green Chac, the Chac of the fifth direction, is descending. When, in my former article, I described this caban

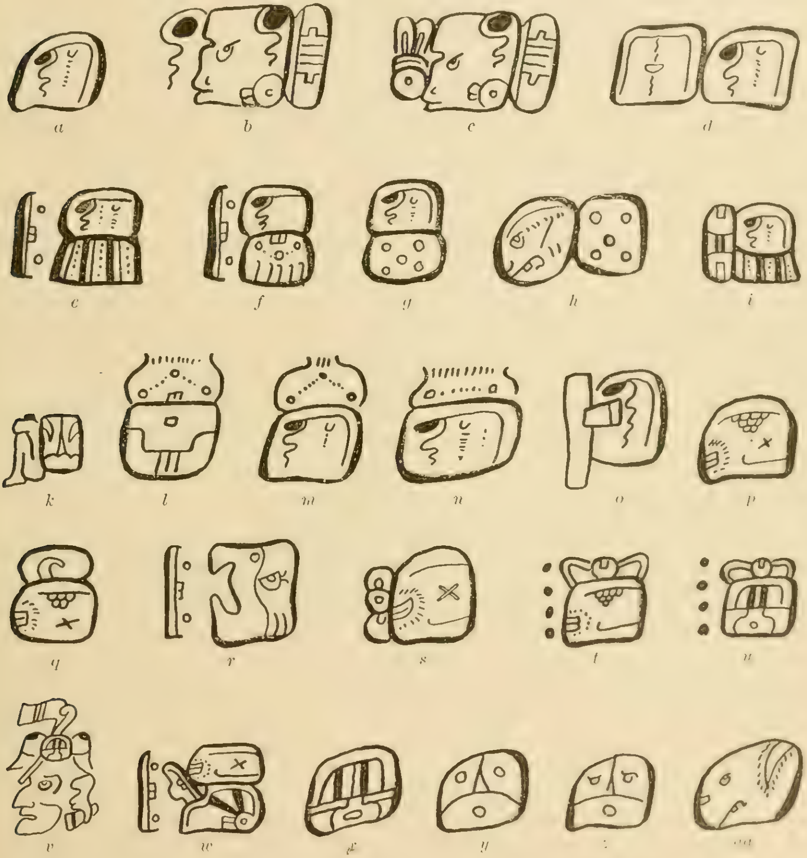

FIG. 5. Day signs and related glyphs from the Maya codices.

snake, as well as *d*, which in the Dresden manuscript in several places serves as a seat or footstool for Chac, and the element Caban generally as the heavenly seat, I gave the wrong emphasis to descent from above instead of to descent. In fact, this figure, like *w*, figure 4, which serves in other parts of the Dresden manuscript as the seat of Chac, should be defined as "the lower place", the "earth". Indeed, the face of the old earth goddess is clearly visible in *w*, figure 4, while the figure of the hieroglyph Caban, as I stated above, shows us the goddess's hair. I will also mention *i*, figure 5, which in the Troano codex, page 25**b*, accompanies the figure of the tobacco-smoking god of heaven. According to a view still prevailing in Yucatan, the Balam, the gods of the four cardinal points, or the four winds, are great smokers, and shooting stars are merely the burning stumps of gigantic cigars which these beings fling down from heaven. And when it thunders and lightens, the Balám are striking fire to light their cigars.[a] Glyph *i* gives us the element of the stone and the element of descent from on high. The popular belief just described explains therefore in a simple way these singular pictures and the hieroglyphs which accompany them. In another place (Troano codex, page 26**b*) the smoker is described in the text by the hieroglyph *k*. This is either to be translated as "the nocturnal" (see the hieroglyph Akbal) or as "the red", Chac. For I have found the element Akbal in various places (for instance, in the Cortes codex, page 20*d*) used as a substitute for *u*, figure 1, Chac, "red".

The eighteenth day sign in the Zapotec calendar bears the name opa or gopa. This is undoubtedly the same word as copa, "cold", "the cold"; tàca-còpa, tipèe-còpa, "to be cold"; tixòpa-ya, "I am cold." This name agrees with the meaning of the sign in the Mexican calendar (Tecpatl, "flint") and with the pictures of the Maya hieroglyphs (Ezanab), which also represent the stone which is struck, the tip of the flint; for the notions "stone", "tip", "cold" are merged, one into the other, in the conceptions and language of the Mexicans. Itztlacoliuhqui, the god of stone, is also the god of cold, of infatuation, and of sin.

The Zapotec name for the nineteenth day sign is harder to interpret. After removing the prefixes, we have the forms ape, appe, aape, gappe. This is probably to be resolved into aa-pee or caa-pee, and this would signify "covered with clouds" or "cloud covering". Now, this does not answer directly to the Mexican name Quiauitl, "rain", but it does to the form of the Maya hieroglyph (*p*, figure 5), which, as I have shown in my former work, contains an abbreviation of the head of the moan bird (*k*, *l*, and *m*, figure 4), the mythical conception of the muyal, the "cloud covering of the heavens." The name also seems to correspond to the other Mexican names, for the sign in Guatemala was ayotl, "tortoise"; for the cloud was also expressed by the picture of a flying tortoise. In Cortes codex, page 17*a*, we see its picture accompanied by the group of hieroglyphs of *q*, figure 5, which contains in its first part above the element of flying and below it the element Cauac. And elsewhere we see the tortoise, now in a stream of water, with the frog, coming down from above; again with open jaws hanging to the heavenly shield.[a]

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[a] Brinton, Folklore Journal, v. 1.

But if the Zapotec name for the nineteenth day sign can only be placed among the names of the other calendars with a certain doubt attached to it, on the other hand the Zapotec language affords the only and direct clue to an explanation of the part which the hieroglyph Cauac plays in the Maya manuscript. We find on the one hand, it is true, terms which approach to the idea of clouds and rain. Thus there is the hieroglyph *s*, the companion hieroglyph of *k*, figure 4, that is, the bird moan. So also in *f*, figure 3 (page 36), is the companion hieroglyph of the name Kinchahau, which besides Cauac also contains the element of fire and that of the ax, which would suggest the lightning flashing from the clouds. But the hieroglyph Cauac is chiefly used simply with the meaning "stone" or "weight". This is most strikingly shown in the animal traps which are represented in Troano codex, pages 9*a* and 22**a*, where the stones laid upon the beams to weigh them down have the element of the hieroglyph Cauac written on them. But we must also accept this same explanation when we find the pyramidal substructure of the temple covered with the element of the sign Cauac. And if in Troano codex, page 15**a*, the Chac felling a tree is confronted with the death god felling a tree which is covered with the element of the sign Cauac, it probably only means that a barren stone is substituted in the case of the death god for what is a living tree in the case of Chac. The many instances where the hieroglyph Cauac serves as a seat or footstool for the gods are probably to be interpreted sometimes as clouds, but in most cases undoubtedly as stone, homologous with the hieroglyph Caban and the element tun ("stone") itself (*v*, figure 5), both of which we so often find depicted as the seat and footstool of the gods. There is quite as little doubt that the element Cauac in the hieroglyph of *w*, which denotes the bearing of a burden on the back, is to be conceived of simply as the expression of "that which weighs down", "the burden".

In the remarkable instances where we find the gods holding a board in their hands on which are the elements of the sign Cauac or where a board provided with a plaited handle is drawn in front of the gods, the surface being covered with the element Cauac, it seems to denote a sounding-board, for the hieroglyphs added seem to mean music. Finally, there are also direct resemblances between the element Cauac and the element tun. Thus in the hieroglyph of the god of hunting, *e*, whose distinguishing characteristic usually is that he bears on his diadem an eye or the element tun, that is, a "jewel". The hieroglyph of this god is sometimes written in the form shown at *t*; sometimes in that of *u*. And that the element substituted in *u* for the element Cauac is actually to be conceived of here as tun or "stone", "precious stone", follows, on the one hand, from its use as a precious stone in the head ornament (tun, "stone", "precious stone"), and, on the other hand, from its being the basis for the post on which Mam, the Uuayayab demon, is set in the xma kaba kin (Dresden codex, page 25*c*). Now, it is surely quite safe to assume a connection of ideas between clouds, rain, and stone, for in those regions every rain is a thunderstorm. Nevertheless, it will be plain that an army of doubts was routed when I hit upon the fact in the course of my Zapotec studies that the very same word, that is, quia, quie, is used in Zapotec for "rain" and "stone".

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[a] The tortoise plays a similar part among the northern Indians. Catlin learned from the Mandan that "there were four tortoises—one in the north, one in the east, one in the south, and one in the west. Each one of these rained ten days and the water covered the earth." (Manners and Customs of the North American Indians, v. 1, p. 181.)

For the last day sign we find in the Zapotec calendar the name lào or loo, and this means "eye", "face", "front." This again does not agree directly with the Mexican Xochitl, "flower", but with the form of the Maya hieroglyph (*y* and *z*), which undoubtedly represents a face. The name of the Maya sign Ahau, "leader", also agrees. There is also undoubtedly a connection of ideas between "eye" and "flower". To be sure, I can not now actually prove it from the Zapotec tongue. But I showed the metamorphosis of the eye into the flower in the Zapotec figures which I described and copied in Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, volume 1, parts 1 to 4. And indeed the Zapotec word for flower may explain some singular resemblances of the hieroglyph Ahau. In Zapotec, for instance, "flower" is quije, which is very much like the word quie, "rain", and "stone". The i, as is stated in a grammar, was pronounced with stronger emphasis ("for this ij is emphasized more than to signify the stone"). Now, it is indeed a striking fact that the element Ahau (Mexican xochitl, "flower") in some hieroglyphs seems to be homologous with the element Cauac (Mexican quiauitl, "rain"). If this were a single instance, I should not lay much stress upon it. But as the above researches as to the meaning of the Zapotec day signs have in almost every instance shown that the Zapotec names formed the connecting link for apparently irreconcilable differences in the Mexican and Maya names and designations, I believe that I may also add this coincidence to the rest.

It is obvious from its situation and it is also historically proved that the country of the Zapotecs was the region above all others in which an interchange was effected of cultural influences which spread from the Mexican region to that of the Maya races and vice versa. But the present researches force us to the conclusion that the Zapotec country was more than a region of interchange; that it was the land in which the Mexican calendar, a most important factor in our knowledge of the Mexican races, had its origin. Indeed, among no other races did the calendar and the determining of fate connected with it exert so powerful an influence over all the relations of life as among the Zapotecs. We can speak with greater confidence upon this point when more is known of that Maya race bordering on the Zapotecs, the Tzental-Zotzil of Chiapas.

ANCIENT MEXICAN FEATHER ORNAMENTS

BY

EDUARD SELER

ANCIENT MEXICAN FEATHER ORNAMENTS[a]

By Eduard Seler

In the question raised by Mrs Nuttall as to whether the ancient Mexican feather ornament in the Imperial Museum of Natural History at Vienna, which came from the collection at the castle of Ambras, is to be regarded as a standard, such as prominent Mexican warriors wore strapped to their backs in battle and in dances, or rather as a headdress. I have not declared for one theory or another, and have taken part only in so far as I was justified in believing Mrs Nuttall's proofs to rest on mistaken premises. She maintains that the ornament in question should be considered as a headdress, and, indeed, only as the headdress of Uitzilopochtli, which at the same time was also worn by the Mexican king. This view I am inclined to reject.

As for the matter itself, Valentini has already pointed out in an article in the American Antiquarian that headdresses similar to the Vienna headdress are to be found here and there upon figures in the Maya sculptures. Mrs Nuttall subsequently brought forward the figure of a god from a picture manuscript which she was so fortunate as to discover in the Biblioteca Nazionale at Florence (and which is an older and better copy of the codex attributed to Ixtlilxochitl than is in the Aubin-Goupil collection), a figure wearing a head ornament which is indeed strikingly like the Vienna ornament as it now exists with missing frontlet. But this is not the god Uitzilopochtli, as Mrs Nuttall asserts and as I also credulously repeated, but Tezcatlipoca. I recently assured myself of this when I had an opportunity to examine the original in Florence.

This figure is surrounded by impressions of a child's foot imprinted in the scattered meal, which announces the arrival of the young god Telpochtli Tezcatlipoca, the first of the gods returning home to their city. The god Tezcatlipoca is represented in exactly the same way in the Codex Vaticanus A, and there denotes the twelfth feast of the year, the feast Teotleco ("the god has arrived"). Finally, I have tried, in my second article, to make it seem probable that the quetzalapanecayotl ("quetzal-feather ornament of the people of the coast regions"), which, together with xiuh-xayacatl, or coa-xayacacatl, the snake mask of turquoise mosaic, forms the most conspicuous piece of adornment of the god known as Quetzalcouatl in the legend cycle of Tollan,[a] was a headdress similar to that worn by the god in the manuscript of the Biblioteca Nazionale. Being convinced of this, I could accept Mrs Nuttall's conjecture that the upper part of the hieroglyph apanecatl in the Boturini codex was intended to represent an apanecayotl. While I fully recognized that the interpretation offered by Mrs Nuttall was not unwarranted, I still believed that the other construction, given by von Hochstetter, which is based on an old oil painting in the Bilimec collection, was not to be set aside. For, six months before, during an inspection of the Aubin-Goupil collection, I had discovered the original of the Bilimec warrior in the figure of King Axayacatl, who advances to battle against the arrogant Moquiuix, king of Tlatelolco, with the banner bound upon his back. I could merely allude to this in my communication of that date. For during the hour which was allowed me to examine the Aubin-Goupil collection I had no time for even the hastiest sketch. Doctor Uhle, who undertook to defend Mrs Nuttall's views in a reply, was quite reluctant to accept this statement, brought forward without proof. Fortunately, I am now in a position to offer a photographic reproduction of the pages in question (Cozcatzin codex, pages 14 and 15), which is taken from E. Boban's published synopsis of the Aubin-Goupil collection.

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[a] Verhandlungen der Berliner Gesellschaft für Anthropologie, 1893, p. 41

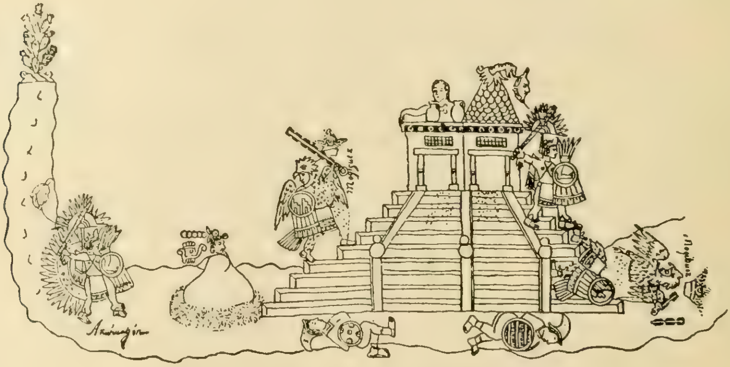

FIG. 6. Copy of figure in the Cozcatzin codex.

The very first glance shows us that the selfsame warrior in the selfsame ornaments is represented here as in the Bilimec picture (compare figure 6 and *d*, figure 9), only the latter is not a mere copy of one of the figures in the Cozcatzin codex, but of kindred originals, and at any rate the same tradition guided the artist in both cases.

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[a] Both these pieces are ascribed to Quetzalcouatl of Tollan, not only in the passage from the Anales de Quauhtitlan, which I quoted in my former article, but also in the Aztec text of the twelfth book of the historical work of P. Sahagun.

At the time when Axayacatl was king, that is, supreme war chief of the Mexicans, the kingdom passed through a severe crisis. After Itzcouatl freed the Mexicans from the supremacy of Azcapotzalco and the elder Motecuhzoma had prepared the conditions for the later rapid extension of Mexican dominion by establishing the alliance of the three states and forcibly subjugating Chalca, the enemy arose against Axayacatl in his own house. Close by Tenochtitlan, on the same marsh island, was the sister city of Tlatelolco, whose inhabitants, although of another and an older race than the Tenochca, living according to laws of their own, had hitherto united their interests with those of the Mexicans and fought shoulder to shoulder with them for instance, against Azcapotzalco. In the early years of Axayacatl's reign, discontent, which had probably long been smoldering, broke out. Histories give various insignificant provocations as the cause. Suffice it to say that Moquiuix, king of Tlatelolco, openly took up arms against Tenochtitlan. The danger was all the greater because the neighboring cities allied to the Tlatelolca, Azcapotzalco, Tenayocan, and Quauhtitlan, also turned their arms against the Tenochca. Here young Axayacatl seems to have decided the matter in favor of the Mexicans by his own military ability. The Tlatelolca were forced back from street to street and finally surrounded in the great market place of Tlatelolco, near which the terraced pyramid of their god rose like a citadel. The warriors of the Tlatelolca took refuge upon its apex, and it was Axayacatl himself, as historians unanimously state, who, pressing forward, slew King Moquiuix and hurled him down the steps of the pyramid. It is this event which is portrayed in the accompanying cut (figure 6) from the Cozcatzin codex. On the left we see King Moquiuix, in eagle array and denoted by his name hieroglyph, escaping up the steps of the pyramid pursued by Axayacatl; on the right, the victorious Axayacatl on the pyramid and Moquiuix lying vanquished at the foot.

I have pointed out in earlier works that it follows from history, as well as from picture manuscripts, that Mexican kings and commanders in chief in later times assumed in war the dress and attributes of the god Xipe, the red god of the Yopi, who was called Tlatlauhqui Tezcatl or Tlatlauhqui Tezcatlipoca, the god who was clad in a flayed human skin. This follows from various passages in the Crónica Mexicana of Tezozomoc. It is confirmed by Sahagun, who mentions as first among the military equipments of kings the tlauhquecholtzontli ("crown made of the feathers of the roseate spoonbill"), which was worn together with the coztic teocuitlayo ueuetl ("the gilded timbrel"), the tlauhquecholeuatl ("the jacket of spoonbill feathers"), and the tzapocueitl ("the petticoat or apron of green feathers lapping over one another like tiles"), all parts of the dress of Xipe. And it is clearly demonstrated by a passage in the Codex Vaticanus A (page 128).

where we find, in the year "9 Calli" or A. D. 1501, King Motecuhzoma the younger represented in the complete dress of Xipe as victor over Toluca (*a*, figure 7). This Xipe dress is expressly mentioned in a passage of the Crónica Mexicana by Tezozomoc as the dress formerly worn by King Axayacatl. I copy the passage in full, because it is of interest in relation to our picture. It refers to an enterprise against Uexotzinco, lying on the other side of the mountains and hostile to the Mexican confederation, in the reign of Motecuhzoma the younger. Tlacauepan, the younger brother of the king, comes to Motecuhzoma and says: "Lord, I believe that my eyes to-day behold you for the last time, for I am minded to put myself at the head of the troops and make my way through or die in the attempt." To this the king replies: "If such be thy will, then take this armor, which once belonged to King Axayacatl, the golden device teocuitlatontec with the tlauhquechol bird upon it and the broad wooden sword with broad obsidian blades" (Pues que asi lo quereis, tomad estas armas que fueron del rey Axayacatl, una divisa de oro llamado teocuitla tontec con una ave en cima de el tlauhquechol y un espadarte ancho maac cuahuitl de ancha navaja fuerte).[a]

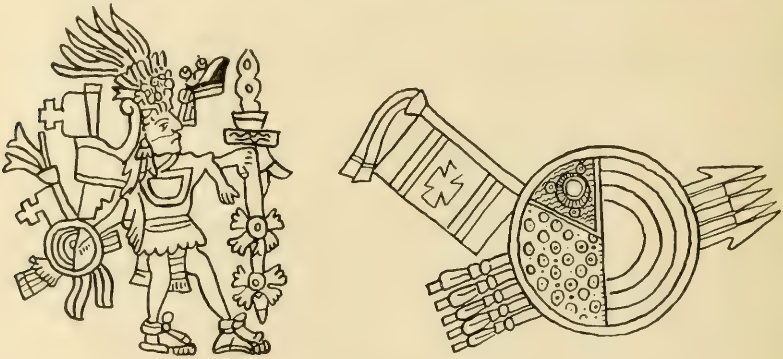
a *b*

FIG. 7. The god Xipe's dress and shield.

Now it is indeed this Xipe armor in which we see King Axayacatl represented here in the cut from the Cozcatzin codex, as well as in the Bilimec picture. This is most plainly apparent in the human skin, the hands of which hang down over the king's wrists, the feet forming a sort of cuff over the ankles. So also the wholly un-Mexican feather skirt, almost like a theatric costume, which surrounds the hips of the Bilimec warrior, the tzapocueitl, is a part of the Xipe dress. This Xipe petticoat is made of feathers, running into points and overlapping each other like tiles. Likewise the tiger-skin scabbard with which the obsidian sword is provided in both pictures points to Xipe. In other particulars the dress differs in no small measure from that of representations of this deity hitherto known. The god usually wears on his head the yopitzontli, a pointed crown made of the rose-colored feathers of the spoonbill, with fluttering ribbons, forked like a swallow's tail. Axayacatl, however, is usually represented in the Cozcatzin codex with the xiuhuitzontli, the turquoise mosaic headband of Mexican kings, and the Bilimec warrior wears the quetzallalpiloni, the fillet with quetzal-feather tassels. The plume which in both figures of Axayacatl (figure 6) rises behind the shield is likewise nothing else than an essential part of the royal Mexican dress. It belongs, as a tuft, to the machoncotl, the shell bracelet which the king wore on his upper arm (compare the picture in the atlas of Durán).

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[a] Tezozomoc, Crónica Mexicana, chap. 91.

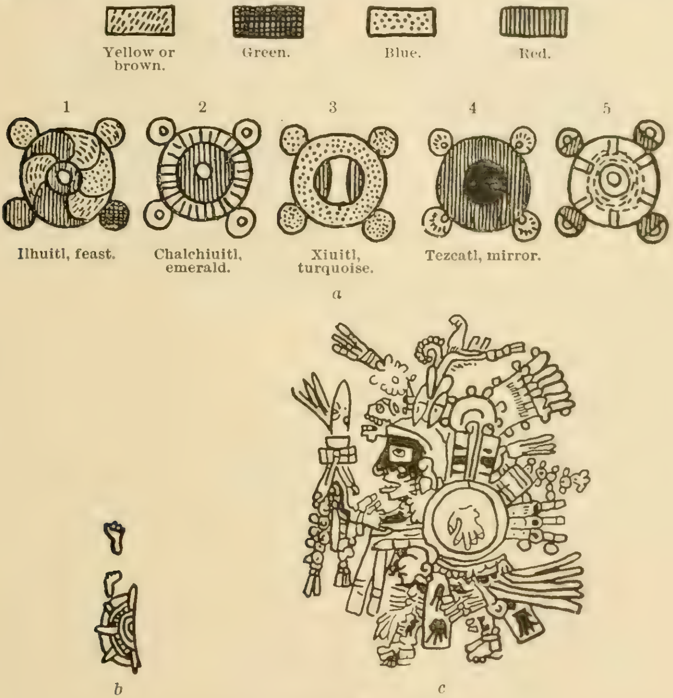

FIG. 8. Disks from Mexican codices.

Xipe's shield is the tlauhtequilacachiuhqui, a round shield covered with the rose-colored feathers of the spoonbill, showing concentric circles of darker tint on its surface. It is not infrequently bisected vertically, in which case one half is divided by an oblique line into a larger lower and a smaller upper panel. The former has a tiger-skin design, the latter the figure of an emerald in a blue field, or one traversed by wavy lines (see *b*, figure 7). I formerly explained the emerald as a mirror. This is not quite correct, although in the drawing of both (mirror and emerald) the same fundamental principle of the glittering disk throwing rays in all (four) directions is expressed. See *a*, figure 8.

where 1, 2, 3, and 4 are taken from the manuscripts, and in fact from hieroglyphs whose phonetic value is known, while 5, which occurs on a beautiful clay vessel found in the vicinity of Tlaxcala, with tiger and snake heads, a bundle of spears, and a feather ball, is perhaps only meant to represent the fiery luminous disk in general. The emerald in a watery field is to be read chalchiuh-atl. This may mean, in general, the "precious fluid"; but it is more probably the same as chalchiuh-uitz-atl, the "precious water flowing in penance"—that is, the sacrificial blood, the blood. Indeed, upon the beautiful feather mantle belonging to the Uhde collection in the Royal Museum of Ethnology we see the emerald above, on a bright green field, and below it a stream of blood with a skull on its surface. These characteristic symbols, which are seen on Xipe's shield, on the Chimalli stone from Cuernavaca (*b*, figure 7), and also, although only indicated, on the shield borne by Motecuhzoma dressed as Xipe (*a*, figure 7), are wholly wanting in the Axayacatl disguised as Xipe of the Cozcatzin codex and in the Bilimec warrior. In both an arm is painted on the surface of the shield. This is not very common as a shield emblem. And the agreement upon this point, in conjunction with the identity of the devices on the back, is a striking proof in favor of the theory that the painter of the Bilimec picture and the artist of the Cozcatzin codex had the same original or, at least, the same tradition in mind.

In the Sahagun manuscript of the Academia de la Historia a shield with a drawing of a hand under the name macpallo chimalli is represented among the shields of chiefs and warriors of lower rank. But this name does not explain the meaning of the emblem. On the other hand, I find the shield with the hand on a beautifully drawn colored page in the Aubin-Goupil collection, which the publisher, Eugène Boban, describes as "worship of Tonatiuh (the sun), a document relating to the theogony and astronomy of the ancient Mexicans", and which, as he explains, perhaps represents looking up at an eclipse of the sun.[a] This cut reminds us, by the style of painting, of the Vienna manuscript, and originated somewhere near the Olmeca Uixtotin Mixteca. The paintings are done on a piece of leather, which is covered with a kind of white stucco, such as we find in the Mixtec manuscripts of the Philipp J. Becker and Dorenberg collections. The sheet is a representation of the tonalamatl in five, instead of four, directions.

The tonalamatl divisions in question are not, strange to say, designated by the initial days, but by two dates, which, as it seems, represent the name hieroglyphs of the divinities which adorn this division, one of which is combined with the numeral 1 and the other with the numeral 5. The five dates with the numeral 1 and the five with the numeral 5 are just 51 days apart. And these five times 51 intermediate days are marked on the sheet by small circles in the circumference of the five divisions. Here we find a male and a female deity placed opposite to each other in the first (upper right) division, which is shown to belong to the region of the east by the drawing of the heavens with the image of the sun upon it and, moreover, by a rising sun (*b*, figure 8). Beside the latter stands ce Mazatl (“one deer”), as the name hieroglyph of the day. Beside the former (*c*, figure 8) as name hieroglyph of the day is macuilli Cuetzpalin (“five lizard”). The former god, whom I must take, for various reasons, to be the same as Xolotl in the Borgian codex, page 29 (*a*, figure 9), wears on his left arm a shield, which has a hand as its emblem, and the ends of his loin cloth are also painted with large black hands. Xolotl is a figure which originated in southern regions, and may possibly represent fire rushing down from heaven or light flaming up in the heavens. In the manuscripts

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[a] A copy, and that a very bad one, of this was made by León y Gama, in which the middle part is restored, doubtless incorrectly, as may be clearly seen in several preserved portions. This copy was reproduced by Brantz Mayer ("Mexico as it was", etc., New York, 1844) as the upper side of a buried stone found in Mexico, which was said to have served for the sacrificio gladiatorio. This copy is also given by Chavero in "México á través de los siglos", v. 1, as "Piedra policroma del sacrificio gladiatorio".

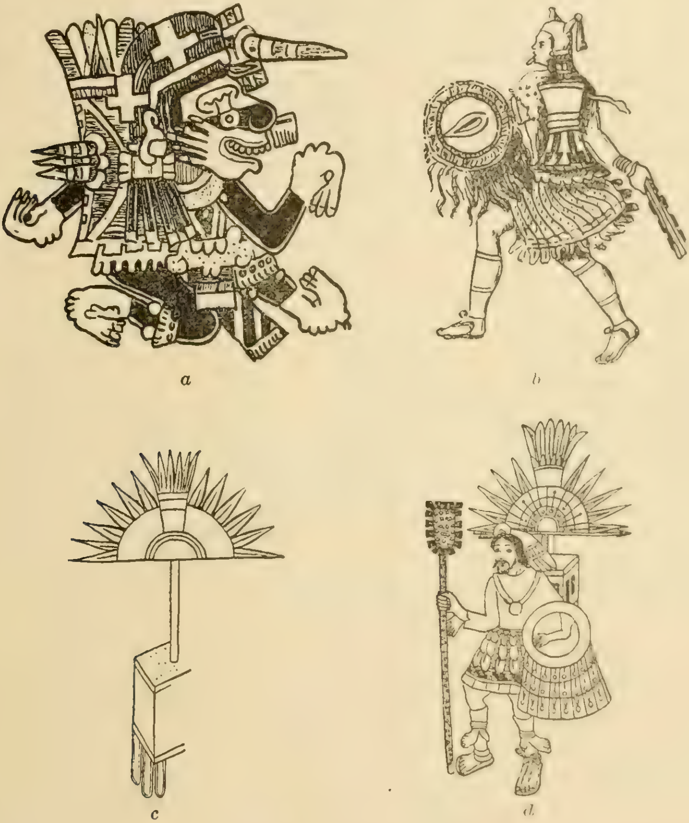

FIG. 9. Mexican shields.

the setting sun, devoured by the earth, is opposed to him, similarly as the sun god is opposed to the death god. He may perhaps be described as a sun god of southern tribes (Zapotecs?). In the Mexican legend he appears as the representative of human sacrifice and as the god of monstrosities, perhaps identical with Nauauatzin, the "poor leper", who leaps into the flaming fire, sacrificing himself, in order that he may rise again as the sun in the firmament. The Xolotl head (quaxolotl) is therefore one of the most prominent warrior devices.[a] Xolotl is doubtless a kindred figure to the god Xipe, and his home should be sought in the immediate vicinity of Xipe's home. The shield with the human arm as its emblem, which is worn by Axayacatl of the Cozcatzin codex and by the Bilimec warrior, is therefore hardly to be regarded as an irregularity or as anything contradictory to the former costume.

I now come to the device on the back, the remarkable standard, which von Hochstetter has used to interpret the Viennese ornament. For the sake of clearness I have drawn it once more from the Cozcatzin codex as *c*, figure 9, and contrasted it with the Bilimec warrior, *d*. Here, first of all, we should consider the framework, from which the standard apparently rises. It is obvious that it is not a house, as von Hochstetter and Mrs Nuttall assumed, and as Doctor Uhle finally "proved".

We grant Doctor Uhle, to be sure, that the "dark distinguishable door and window openings" in the small Bilimec picture might lead him astray. In other respects the frame on the Bilimec warrior resembles a Mexican house as little as possible. On the contrary, that the object in question is a genuine framework carried on the back is clearly shown by the straps crossing over the breast of the figures in the Cozcatzin codex. But what kind of a framework can it be? Of course, it has nothing to do with the ladderlike carrying frame (cacaxtli), to which devices for the back are fastened elsewhere. I hesitate between two theories. The most natural conjecture would be to consider it only an ill-drawn ueuetl, a drum, such as King Nezaualcoyotl wears in *b*.[b]

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[a] See Zeitschrift für Ethnologie, 1891, v. 23, p. 127.

[b] Singular conflicts have arisen in regard to this portrait. It belongs, with three others, to a manuscript which is ascribed to the historian Don Fernando Alva de Ixtlilxochitl, a decendant of Tetzcocanic kings; later it doubtless came into the hands of the learned Jesuit Don Carlos de Sigüenza y Gongora with all Ixtlilxochitl's possessions, and now forms a part of the Aubin-Goupil collection. At the time that it was in Sigüenza's hands, the Neapolitan traveler, Gemelli Carreri, visited Mexico and copied these four portraits, with other parts of the manuscripts, to use in the account of his travels. These four portions represent, as the legends accompanying them state, the Tetzcocanic kings Nezaualcoyotl and Nezaualpilli and two Tetzcocanic nobles (tribal chiefs ?), named Tocuepotzin and Quauhtlatzocuilotzin. But Gemelli Carreri classed these with a fifth portrait, which, according to Boturini, also represents King Nezaualpilli, and gave them the names of the Mexican kings Tizoc, Axayacatl, Auitzotl, Motecuhzoma, and Quauhtemoc. But it happened that in the first Neapolitan edition of his "Giro del mundo" (Naples, 1699–1701), the original, correct name (Nezaualcoyotl) was left attached to the second figure. In later editions (Venice, 1719; Paris, 1719) the list of Mexican kings is complete. Kingsborough's five portraits are reproduced from the first Neapolitan edition, and I owe it to this circumstance that I was enabled to give King Nezaualcoyotl (*b*, fig. 9) his true name in my work.

For such an object, the yopiueuetl, is actually a part of Xipe's costume.

In the drawing of the Cozcatzin codex the lower appendages may very well represent the feet of the ueuetl. The dotted upper portions may be meant for a tiger skin such, for instance, as serves in the Borgian codex, page 55, as a drumskin for the ueuetl beaten by the coyote-eared god represented there. To be sure, the square form of the framework contradicts this theory, for the ueuetl is usually drawn round, cylindric (see figure 10). If we reject this interpretation, we can conjecture that it may be a quetzal comitl, a feather basket, which Tezcatlipoca and other gods are often represented wearing on their backs.

The handle of the standard, which rises from this framework, in the Cozcatzin codex is apparently dotted, like the wooden sword which the king holds in his hand. We must suppose that the handle was also meant to be represented as covered with tiger skin. This, I think, is the case with the Bilimec warrior. The handle of his standard is composed of three perpendicular lines. Between two of them we see a diagonal striping, which led Mrs Nuttall to read the mecatl here as "rope". I think this diagonal striping, like that on the Xipe shield (*b*, figure 7), is meant to express the hairy belly of the tiger, which should be indicated on the right hand, between the other two vertical stripes, by spots, but was omitted in the original from which the painter worked by an oversight such as often occurs in the manuscripts.

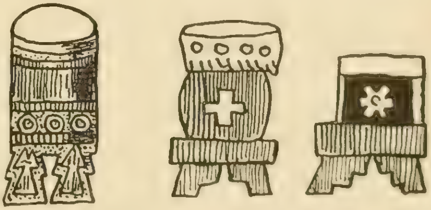

FIG. 10. Mexican drums (ueuetl).

Lastly, the fan-shaped ornament which is fastened to this handle is identical in character in both illustrations, except that in the Bilimec warrior (*d*, figure 9) an arrow is added to the base. But this can scarcely have any special meaning. Perhaps it is only meant to accentuate the reed frame which serves to support the ornament.

How, then, are we to interpret the device worn by King Axayacatl in the Cozcatzin codex and by the Bilimec warrior?

It may be accepted as a matter of course that it is only a further completion of Xipe attributes. Those who are influenced by Mrs Nuttall's interpretation of the Vienna ornament may be led to conjecture that it is Xipe's headdress borne upon the pole, just as we actually find the pointed Uaxtec cap, which is commonly the actual head covering, also fastened on a frame as a device for the back. But Xipe's feather headdress, at least in so far as we may conclude from

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[a] See Zeitschrift für Ethnologie, 1891, v. 23, pp. 132, 151.

existing illustrations, was of a different form (see *b*, figure 7). From the arrangement of the whole ornament it also seems to me, as von Hochstetter asserts for the Vienna ornament, that it is based upon the idea of a bird swooping down from above with outspread wings, the middle, higher, upright part representing the tail, the side parts the wings, while head and beak are not indicated in the drawings in question. The idea that the Deity came down from heaven in the form of a bird is a widely spread conception that plays an important part in the mythologies of Central American races. From the Xipe dress of the Mexican kings, which I have described in my earlier article,[a] it follows that the god was regarded in three forms: as the red god (having the color of the tlauhquecholli, the roseate spoonbill), as the blue god (of the color of the xiuhtototl, the blue cotinga), and as a tiger (jaguar, ocelotl), probably corresponding to the three regions (heaven, earth, and underworld) or the three elements (fire, water, and earth). These are, moreover, the same three colors or variations represented on his tripartite shield described above.

In the manuscripts Xipe himself is usually represented in one form only, as the red god; just as Ixcozauhqui, the fire god of Tlatelolco, only appears in the manuscripts in one form, as the burning, devouring fire, although he, too, as we know from the description of his festival, was represented in twofold form, as the light-blue one with the turquoise and emerald mask and as the burning one with the mask of red shell plates and black tezcapoctli. On the other hand, we find the god Tezcatlipoca represented in the manuscripts now as the red one and again as the black one, and as both of these—for instance, in the Borgian codex, page 18—placed together. It is worthy of note that the red Tezcatlipoca (Tlatlauhqui Tezcatlipoca) is not only given as one of the names of the god Xipe, but that occasionally also, just where Xipe should be drawn, a red (tlatlauhqui) Tezcatlipoca is drawn instead, as in the Borgian codex, page 28, with the fifteenth day sign (quauhtli, "eagle"). The manuscripts originating in more southern regions, Zapoteca and Mixteca, seem to be more authoritative than the genuine Mexican ones in regard to the representations of the deities in question. Among the former, the manuscript preserved in the Vienna library is the most important. In the first part of this we find the god Xipe in his classic form, clad in the flayed human skin, and designated by the date chicome Quiauitl, "seven rain". As in the Borgian codex we have the red and the black Tezcatlipoca, so too we have here a red and a black god placed together, side by side or one above the other. But in this case the conception is quite different. The strangely formed face shows a tiger's jaw introduced into a human face and eyes surrounded by serpentine lines. The red variant of this god, designated by the date naui Mazatl, "four deer", is dressed in the flaming garb of an eagle-like bird, dyed with the color of the tlauhquechol, or has the head of a similar bird as a helmet mask (*b*, *d*, and *e*, figure 11, right). The other, distinguished by the date naui Miquiztli, "four death", is clad in a similar but blackish bird garment or wears its head as a helmet mask (*a*, *c*, and *e*, left).

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[a] See Zeitschrift für Ethnologie, 1891, v. 23, pp. 133, 134.

I believe that I am right in recognizing in these two figures the southern counterparts of the red and the black Tezcatlipoca. The same idea certainly underlies them both, and I am even tempted to see a reference to Tezcatlipoca in the footprints, which are given under *a*, and in the cobweb under both personages in *c*. Tezcatlipoca descended from heaven by a spider's thread.[a] And lo-pèyo ("the face or image of the moon") is the Zapotec name for cobweb. I therefore conclude that the bird dress dyed with the color of the tlauhquechol was equivalent among southern races to a disguise of the red Tezcatlipoca that is, Xipe.

In the little Bilimec picture there is painted on the surface of the fanlike ornament, which is carried on a pole, a broad stripe of deep-rose color and also one of white; that is, the colors of the roseate spoonbill (tlauhquecholli) and the colors of Xipe. In this fanlike ornament, I repeat, I find the idea of a bird swooping down with outspread wings distinctly expressed.

If these facts are taken into consideration, and if we further consider that in dangerous military enterprises Mexican commanders in chief were accustomed to put on the Xipe dress, formerly worn by King Axayacatl (see the passage quoted above from Tezozomoc, chapter 91), all must, I think, admit that it is not an idle conjecture if I regard the device with which King Axayacatl is depicted in our drawing as a direct illustration of the description which is given in Tezozomoc's Crónica Mexicana of the armor which Motecuhzoma wore at the storming of Nopallan. We read there (chapter 84) that Motecuhzoma awaited his men armado todo de armas, con una divisa muy rica de plumeria, y encima una ave, la pluma de ella muy rica y relumbrante, que llaman tlauhquecholtontec: iba puesto de modo que parecia que iba volando, y debajo un atamborcillo dorado muy resplandeciente, trenzado con una pluma arriba de la ave arriba dicha, y una rodela dorada de los costeaños muy fuerte, y una sonaja omichicahuaz, y un espadarte de fuerte nabaja ancha y cortadora ("fully armed, with a very rich device of feathers, and above a bird, its plume very rich and resplendent, which they call tlauhquecholtontec: it was placed in such a manner that it seemed to be flying, and below a small drum, gilded and very shining, braided above with a feather of the above-mentioned bird, and a very strong shield gilded on the sides, and a rattle (omichicahuaz), and a big sword with a strong, wide cutting blade").

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[a] Mendieta.

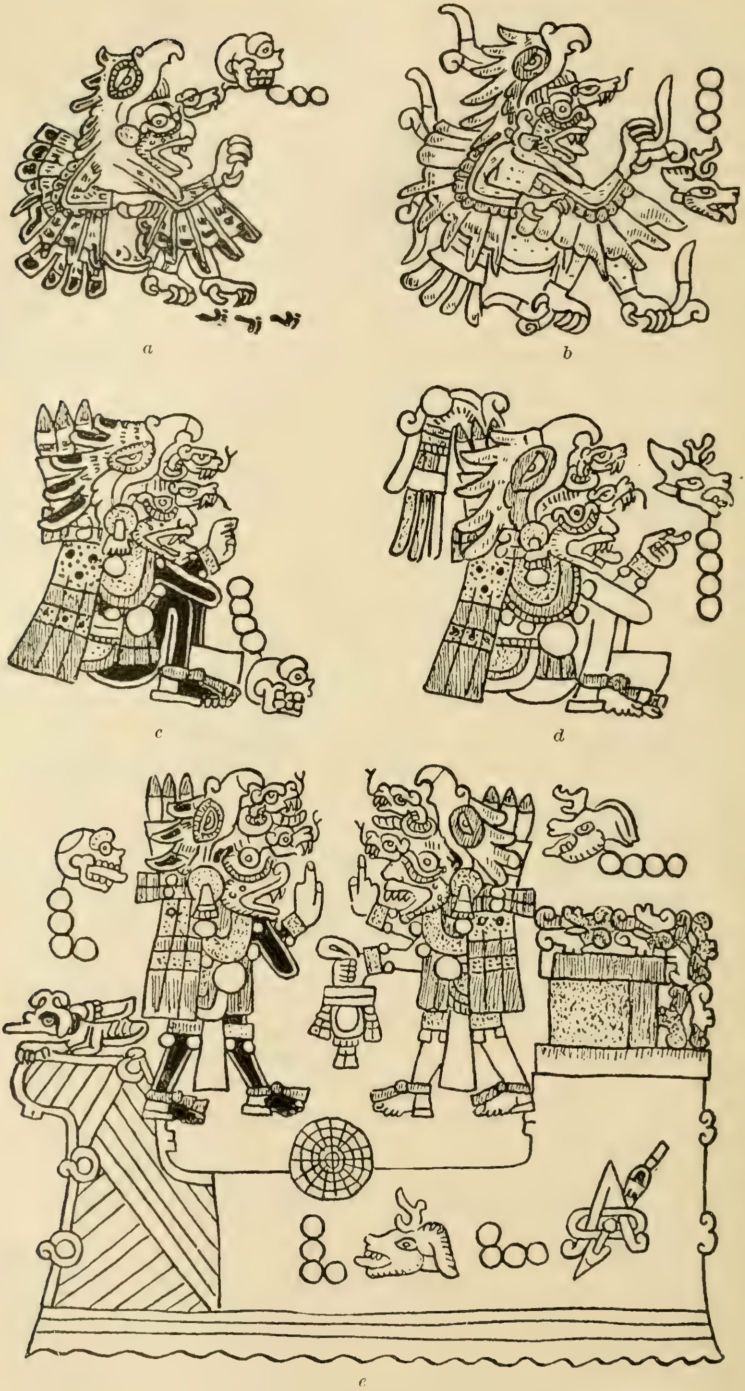

FIG. 11. The black god and the red god, from the Vienna manuscript.

The meaning of this passage can scarcely be construed otherwise than as a reference in this case to a combined ornament for the back, consisting of a drum attached to the carrying frame at the bottom, and of a bird (swooping down?) with outspread wings fastened at the top of the pole.[a]

I am therefore doubtful, in regard to figure 6, whether I may not have done P. Sahagun an injustice in assuming that the passage (book 8, chapter 9) where he states that the tlauhquecholtzontli was a device for the back—y trayan un plumage a cuestas que se llamaba tlauhquecholtzontli muy curioso ("and they carried on their backs a very curious plumage that was called tlauhquecholtzontli")—was based on a false translation or a false application. The passage does, indeed, contradict book 8, chapter 12, where Sahagun says that the tlauhquecholtzontli is a head covering—un casquete de plumas muy coloradas, que se llamaban tlauhquecholtzontli,[b] y al rededor del casquete una corona de plumas ricas y del medio de la corona salia un manojo de plumas bellas que llaman quetzal, como penachos ("a helmet of colored feathers, which was called tlauhquecholtzontli, and around the helmet a crown of rich feathers, and from the middle of the crown projected a tuft of beautiful feathers which they call quetzal, like crests"). But the Aztec text in the latter passage does not directly state that the tlauhquecholtzontli was worn on the head, and in the former passage may possibly be understood to mean that the tlauhquecholtzontli, together with the drum, ueuetl, formed the back device tlauhquecholtzontli tlaçotlanqui quetzalli yeuecuetlacayo, yuical veuetl coztic teucuitlayo yn tlauiztli yn quimama mitotia ("the wig of spoonbill feathers, the precious one with the waving tuft of feathers, and its appendix, the drum covered with gold: that is, the device [or, are the devices] which he wears on his back in the dance"). It is very possible that Father Sahagun, as was frequently the case, did not translate directly, but explained from circumstances known to him. Of course I do not now assert that the feather ornaments described as tzontli, "wig", were all carried on poles. Of the next object, the xiuhtototzontli, the Aztec text says directly: ytzontecon conaquia tlatoani ("with this the king covers his head"), but it seems to me quite possible, as I suggested from the first,[c] that this ornament, like the Uaxtec pointed cap,[d] was also sometimes worn on the head and sometimes borne as a device on a pole.[e]

I now return to the Vienna ornament. Mrs Nuttall's attempt to explain away the Bilimec picture, an attempt which must seem in the highest degree fantastic to all who are familiar with Mexican subjects, is proved by our figure 6 to be false in all its premises. So, too, is the argument recently set forth by Doctor Uhle, that "warriors in battle, who, like the Mexicans, carried their own banners, would not have carried a banner likely to prove a hindrance in battle from its size or the manner of carrying it". The Mexicans did not consider such "practical points of view". The armor which the more prominent warriors assumed for battle was the dress of a deity of whose power they became possessed when they put on his array, and to be assured of this power was probably the first "practical point of view" for the Mexicans. If the costume of the god required a bird with outspread wings to be worn, it would have been worn without much question as to whether it was practical or not. As far as form is concerned, however, the banner which King Axayacatl and the Bilimec warriors wore on their backs, and also the bat dancer (*a*, figure 12) from the Durán Atlas (Tratado 2, plate 8), to which I drew attention in my first communication, may of course be used for purposes of comparison in studying the meaning of the Vienna ornament quite as well as the headdress apanecayotl of the god Tezcatlipoca in the manuscripts in the Biblioteca Nazionale. The horseshoe-shaped curve, on which Uhle lays such especial stress, probably only occurs in the Vienna ornament in consequence of its imperfect state of preservation, the golden beak which originally belonged on the front having now disappeared.

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[a] Uhle asserts, we scarcely see on what authority, that the reference here is to a stuffed bird.

[b] The word amended after the Aztec text of the passage.

[c] Zeitschrift für Ethnologie, 1889, v. 21, p. 63.

[d] Zeitschrift für Ethnologie, 1891, v. 21, p. 132, Doctor Uhle introduces, on p. 151, an illustration from the Aztec text of the Florentine Sahagun manuscript where we see, side by side, the cuextecatl with his pointed cap on his head and a similar pointed cap, quetzalcopilli, borne on a pole upon the back.

[e] Contrary to Doctor Uhle, I must say that it has never occurred to me to connect the expression tzontli, "hair", with patzactli, "device". I distinctly described tzontli as "feather crown" patzactli as "a comb-shaped device worn on the back" in my pamphlet of 1891.

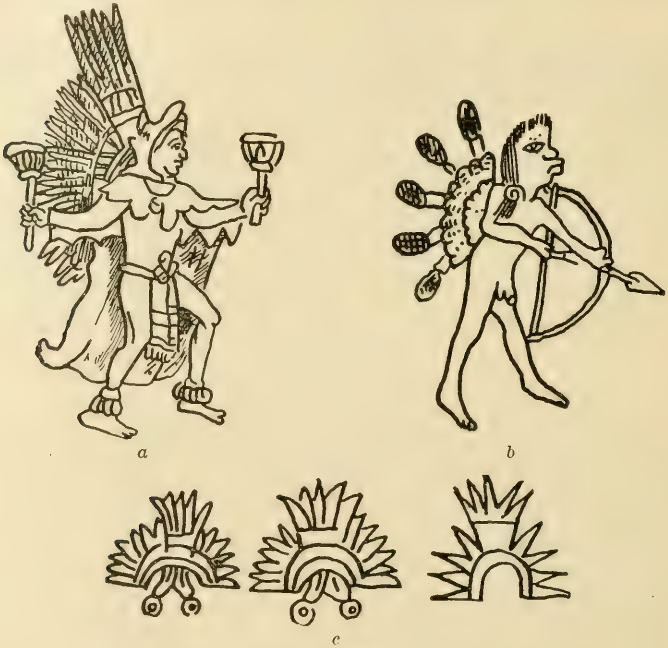

FIG. 12. Mexican feather ornaments.

We may perhaps go further. The ornament now preserved in the Vienna Museum was found in the Ambras collection, together with a feather jacket (ain Mörischer Roekh), a feather shield (ain Rundell Von Roten federn), a plume (ein mörischer Feder Puschen, so aim Ross auf die Stirn gehört, "a Moorish plume, such as is used on the head of a horse"), and a feather fan (ain Wedler von Federn). The feather fan and feather shield were found later.[a] All are articles which belonged to the adornment of distinguished Mexican warriors. For the "plume, such as is worn on the head of a horse," is undoubtedly an aztaxelli—a plume which Mexican warriors stuck into their back tuft of hair when they joined in the dance. This plume and the feather fan most certainly constituted the civic dress (festive dress), the back device, feather jacket, and feather shield being the military dress. If we continue our conjectures, we may also consider it probable that the Vienna ornament was a warrior's device. If this be the case, then the Axayacatl of the Cozcatzin codex and the Bilimec warrior are more appropriate subjects for comparison than the god in the manuscript of the Biblioteca Nazionale.

However, these are mere conjectures. Archeologic considerations do not lead to the goal. Since we are without historical proof, for the note in the catalogue, "ain Mörischer Huet", can hardly be regarded as decisive, the matter must be relegated to that final resort to which, as I have always insisted, it properly belonged from the first—that is, to a study of the object itself. Von Hochstetter is the only one who has really studied the Vienna ornament in reference to its construction. Mrs Nuttall only worked with a model.

In opposition to von Hochstetter, Mrs Nuttall maintains that in his experiments with the original the crease in the stiffening prevented him from recognizing the possibility of its use as a headdress. We grant Mrs Nuttall that the limitation of the transverse stiffening to the side parts indicates a bending of these latter; but this is also quite compatible with von Hochstetter's interpretation. The idea of a bird with outspread wings doubtless underlies the ornament. This kind of stiffening made a movement of the wings possible. Lastly, Mrs Nuttall claims for her theory that, according to von Hochstetter's own statement, there was a pocket or hood-shaped opening large enough to admit a head between the nets which formed the foundation of the front and back of the ornament. But here again von Hochstetter gives a perfectly satisfactory explanation, since he says that in his opinion this pocket merely served to receive the upper part of the carrying pole. While these conditions offer no grounds which oblige us to accept Mrs Nuttall's theory, there are yet two facts which, in my opinion, Mrs Nuttall has not considered sufficiently. One is the defective condition of the ornament. According to the oldest catalogue note there was a golden beak upon the front. Since we do not know how this was applied, or whether it covered the entire width of the front or not, all inquiry as to the possibility of its having been bound around the head is useless and really proves nothing. Von Hochstetter has further established that the back of the ornament was covered with feathers, which, like those on the front, were fastened to a fine netting. This is intelligible if the ornament is flat. In a crown bound upon the head it would have been, to say the least, superfluous; but in this case we would, above all, expect to find a contrivance of some sort on the back of the net to regulate the folding while it is being bound about the head. The absence of this contravenes Mrs Nuttall's theory.

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[a] See Franz Heger. Annalen des Königlich-Kaiserlichen Naturhistorischen Hofmuseums v. 7, pt. 4.

I have not mentioned one piece which is seen on the sheet from the Cozcatzin codex (figure 6), that is, the large wheel-shaped ornament at the left on the back of the Axayacatl figure. I hold this ornament to be of exotic origin, an ornament adopted with the Xipe costume. We are confronted with the question as to how this ornament should be worn, whether in a perpendicular position fastened to a pole, like a kind of movable comb, or whether we should imagine it as a huge horizontal collar falling over the back. I am inclined to accept the latter theory, for similar horizontal collar-shaped feather ornaments were common in the tierra caliente, and were worn especially in the Pacific tierra caliente (see *b*, figure 12 from the Codex Telleriano-Remensis, which represents a member of the unconquered tribes of Jalisco, against whom Pedro de Alvarado took the field). At Oaxaca I saw a pair of clay figures (man and woman), coming from the district of Zimatlan, which combined with a huge aureole-shaped feather headdress another feather ornament worn across the back of the loins like a collar (see *c*, figure 12). I am the more inclined to use these figures for purposes of comparison, because both wore a mask on the middle of the girdle, and this is a peculiar feature found in the Xolotl(?) with the macpallo chimalli (*b*, figure 8), already used by me for comparison, as well as in all the other male and female figures on this sheet.

The question of feather ornaments is a very complicated one and their meaning not easily explained, because these insignia and the whole politico-hierarchic system of the Mexicans are connected with their religious ideas and their cult, resulting from many centuries of development, amid perpetual contact and interchange with kindred and foreign cultures. The basis for the Mexican territory, taken in the strictest sense, must always be the Sahagun chapter, from which I quoted in my previous treatise its most essential pictorial and other contents. I have thus far found little to alter in what I stated then. Our field of vision would be greatly broadened if equally reliable and equally complete sources in regard to the same conditions existed concerning the other nations of Mexico. Unfortunately it is hardly to be expected that these will ever be found.

ANTIQUITIES OF GUATEMALA

BY

EDUARD SELER

ANTIQUITIES OF GUATEMALA[a]

By Eduard Seler

In the admirably written book, Guatemala, in which Doctor Stoll describes the impressions and experiences of a five years' sojourn in the region of this most important of the Central American Republics, the author in several places mentions the Indian burial mounds, which are scattered over the country from the plains in the neighborhood of the present capital up to the tierra fria of Tecpam and the highlands and down again into the tierra caliente of Retal huleu and Soconusco. In this connection he adds the remark that a systematic search of these mounds in various geographically separated localities would contribute much to increase our knowledge of the primitive people of Guatemala.

There were, to be sure, even then collections of antiquities in Guatemala, of which the most important was that of the Sociedad Económica in the capital. At the American Historical Exhibition in Madrid in 1892 Guatemala was represented by a series of beautiful vessels, among which were especially conspicuous the toothed vessels of Amatitlan, the sacrificial vessels of the Usumacinta, to be further discussed below, and beautiful vessels of the Maya type, with figures and hieroglyphs partly painted and partly wrought in relief. All these objects, however, were obtained through occasional finds, and accurate information was lacking in regard to the origin of many of them. There was even exhibited in their midst the Egyptian scarabæus which Stoll mentions in the collection of the Sociedad Económica, said to have been found in the lake of Amatitlan.

Consul-General F. C. Sarg, who formerly lived in Coban, but who now resides in the capital, has likewise made quite extensive collections of antiquities, and some years ago a number of smaller antiquities from the Vera Paz region came, through him, into the possession of the Royal Museum.

Recently, however, that for which Stoll (in 1886) expressed a vague hope has been actually begun. Excavations have been undertaken systematically in at least two regions in the neighborhood of Copan under the direction of the Peabody Museum in Boston, and in Alta Vera Paz by the private enterprise of Mr Erwin P. Dieseldorff and Dr Karl Sapper.

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[a] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, Berlin, 1895.

I have nothing to report here concerning results achieved by the Americans in Copan, and full reports concerning them have not been made known. But the Royal Museum, on the contrary, has been able satisfactorily to open communications with Messrs Dieseldorff and Sapper and has received rich material from both gentlemen, especially abundant from the latter. Mr Dieseldorff has himself begun to report the results of his excavations in the Transactions of the Berlin Society for Anthropology, Ethnology, and Archeology.[a] Doctor Sapper has presented to the Royal Museum his share of the results of the excavations undertaken in cooperation with Mr Dieseldorff and what he has been able to collect on his geologic expeditions in Guatemala. In addition to the reports of this traveler, which form the second article of this number, I will discuss some important specimens of this collection and compare them with such material as the Royal Museum already possesses in earlier collections from the same region.

Beginning in the north, we have before us in the frontier tracts near Yucatan and the mountainous regions of Alta Vera Paz the interesting territory to whose peoples, in pre-Spanish times, an extended maritime intercourse was unknown, which then formed the great highroad of traffic and travel, and which also had doubtless been the ancient highway of migratory nations. Now, however, this region is largely waste and desolate, uninhabited, and covered with primeval forests. Concerning the ancient conditions of this territory, which are obscure in many respects, I wish to make some introductory observations.

Cortes passed through this territory in his famous expedition to Honduras in 1525.[b] He found his way as far as the Usumacinta with the help of charts which the aborigines of Coatzacualco had given him. On the other side of the Usumacinta he came to a territory called Acalan, whose inhabitants on one side carried on an uninterrupted traffic by boat with Tabasco and Xicalango and on the other side had their factories on the Golfo Dulce, on the boundaries of Honduras. There Cortes received more reliable news of the Spaniards settled on the Golfo Dulce, to see whom he had undertaken his expedition. On a piece of cloth they painted for him all the rivers, lakes, and swamps he would have to cross on his overland journey to the Golfo Dulce. In a similar way Canek, the cacique of Peten, the island city of the Lagoon of Itza, proved to be accurately informed. He, too, had his factories and his cacao plantations in the districts which border on the Golfo Dulce, and on the route thither he maintained shelter houses for his native traders and for foreign merchants who came that way.

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[a] Zeitschrift für Ethnologie, 1893, v. 25, pp. 374 and 548; same journal, 1894, v. 26, pp. 372 and 576.

[b] Cortes has himself given a description of this expedition in his fifth letter. Bernal Diaz, who took part in this expedition and describes it very thoroughly, differs from Cortes in some details, especially in a certain place in the order of events. Still, Cortes is here the more authentic source, for he wrote much earlier and had naturally much better opportunity to collect reliable information.

As to the ethnologic relations of this ancient district of intercommunication and migration, the people of Taica, as Cortes spells it—that is, Tahitza—the inhabitants of Peten, the island χατ᾿ ἐξοχην, were pure Mayas, who had emigrated from Yucatan, and were doubtless later intruders, and hence continually at war with their various neighbors.

The location of the inhabitants of the region called "Acalan" is more uncertain. The name, which is occasionally spelled Aculan, but probably by error, is Mexican, and means "land of the boats" (Acallan, as the correct form sounds). Furthermore, two of the cities in this territory had Mexican names. The first, Tizatepetl, means "the white earth mountain" or "village of the white earth". The name may be preserved in the word Saháb, by which a place and a river in this neighborhood are called to-day, Zahcab being the word used in the different Maya languages to express the Mexican word tiçatl. The name of the second city, which is spelled Teutiercas, Teutiiaccaa, and (by Gomara) Teuticcac, is probably to be read Teotl icac, "the upright standing god".[a] There they worshiped a female deity to whom maidens were sacrificed. The name of the capital of Acalan alone, Izancanàc, belongs to a strange idiom, and, as it seems, to a Maya language. The first part of the word is known to this day as the name of a little lagoon on the north of the Rio de la Pasion, where Doctor Sapper found a settlement of Lacandon Indians.[b] It also seems possible to explain by a Maya dialect[c] the title of the prince of Acalan, Apaspolon (or Apoxpalon, as Gomara spells the word). The dialect, however, can not now be determined.[d]

The third territory mentioned in Cortes's letter, that lying between Acalan and Tahitza, was generally called by a Mexican word, Mazatlan, that is, "the deer land." Cortes, however, several times gave Quiacho or Quiache[e] as a synonym for this word. It is doubtless the same name as Quehache, given in the historical work by Villagutierre y Sotomayor, by which is designated a branch of the Maya found at the end of the seventeenth century in the savannas north of the Paso San Andres, neighbors of the Ah Itza, or Itzaex. The Maya word queh, "deer", is contained in the name; it is almost a direct translation of the Mexican mazateca, or mazatlan. That we have to do with a race closely akin to the Maya also appears from the two names of cities, already mentioned, which Cortes left us. Tiac would mean in Maya "city of the tortoise" and Yasuncabil something like "green earth".[a] The fortifications skillfully constructed by the inhabitants of this territory prove that they had to protect themselves against constant hostile disturbances. Bernal Diaz believes that he heard the word "Lacantun" used as the name of these enemies. It will, however, remain undecided whether this name, which was familiar in the place where he wrote, did not come into his mind or to his pen by error The description of the fortified city of the Mazateca in the middle of a lagoon reminds one very strongly of the city built on a rock in the Laguna del Lacandon, which the expedition of Licenciado Pedro Ramirez de Quiñones conquered and destroyed.[b]

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[a] Vatun Chu, idolo derecho, is mentioned as a place of worship in the territory of the Chols. See below. The name of the chief god of the Quiches, Tohil C'abauil, might be translated in the same way.

[b] Ausland, 1891, p. 892.

[c] Perhaps Ahpo xbalón or Ahpo xbolón. Ahpo or Ahpop is a customary expression in the Guatemala language for "lord" and Xbalón, or Xbolón, which means "Mistress of the nine," was, perhaps, the name of the goddess of the country. Cf. the Maya god Ah Bolon Tzacab, the "Lord of nine generations" or "Lord of the nine medicines."

[d] In their intercourse with Cortes and the Spaniards they appear to have used the Mexican idiom, with which they were probably familiar on account of their active trade with Tabasco and Xicalango, and which likewise Marina, Cortes's interpretress, spoke fluently. Where Bernal Diaz repeats the information which the people of Acalan gave the Spaniards, he used exactly the words acales (that is, Mexican acalli, "ship")—que en su lengua acales llaman a los navios—and teules (that is, Mexican tecutli, or teuctli, "prince")—que asi nos llamaban a los soldados.

[e] Other copies give Quiatleo and Quiatha, but they are surely incorrect variations.

There still remain the ancient inhabitants of the mountains to the south and above the road traveled by Cortes. Those to the west were designated the Lacandons, and those in the country about the Rio de la Pasion, to the east, were called Chols.

Lacandon is more a geographic than an ethnographic designation. And, if we are to believe Doctor Berendt,[c] at least two different races must be included under this name even to-day. On the east are the Maya-speaking Lacandons, who live scattered on the lower Rio de la Pasion, and also west of the Usumacinta, on the Lacan ha, the river of Lacan, that is, the Rio Lacandon, and on the west the Lacandons speaking the Putum, or Chol, language, whose chief locations are said to be found in Pet ha, in Chiapas. This account, which was repeated by both Stoll and Sapper in earlier articles, is now contradicted by Doctor Sapper, who recently traveled through the boundary region between Guatemala and Chiapas. He informed me by letter that he had met Mayas speaking Lacandon on the road from Tenosique to Ococingo, and that there were no western Lacandons speaking Chol, and that the ancient Lacandons, who were for a long time the terror of the Spanish settlements in Chiapas, Guatemala, and on the lower Usumacinta, spoke, in part at least, the Maya proper, as appears from a few words which have come down to us. Against these Lacandons a succession of costly campaigns was made, almost entirely in vain. Thus the Lacandons who met the column of Melchior Rodriguez, in 1695, when it was advancing from Itzatan toward the north and northeast to the Rio Lacandon, called to the Spaniards in pure Maya: Utz im pusical, "my heart is good"—that is, "good friend, we are harmless people".[a]

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[a] It is interesting that the name which Gomara mentions for the second of these two cities, Xuuca Cahitl, is doubtless, at least in its first part, a translation into Mexican, for xoxouhca in Mexican means the same as the Maya yax, that is, "green".

[b] Villagutierre y Sotomayor, v. 1, chap. 12.

[c] Berendt, Report of Explorations in Central America, 1867, p. 415.

The Chols, on the other hand, who still dwelt in the mountain forests at the source of the Rio de la Pasion as far as the Sarstun at the beginning and at the end of the seventeenth century, having a numerical strength of 30,000 souls, were genuine Chols. To them belonged the Menché,[b] the Axoye, and other lesser tribes; and the Mopan must also have been very closely akin to them. These Chols not only had the same name as the tribe still existing to-day in the north, in the neighborhood of Palenque, but also proved their kinship by certain peculiarities of language, especially the change of c to ch.[c] This fact is the more important because it seems established according to the notes made by Doctor Sapper[d] that the Chorti, the tribe whose descendants are settled to-day in the neighborhood of Copan, likewise belong to the same family.[e] Thus, in fact, we have in that ancient thoroughfare a broad zone of related tribes, into which the Mayas wedged themselves only on one side, in the north, from Yucatan, and on the other side, in the south, in the valley of the Rio Grande, or Motagua river, the Mexican branch of the Pipils conquered a place for themselves. Based on ethnologic conditions the kinship is apparent in the architectural style of the magnificent structures at the beginning and at the end of this great highway of nations—on the one hand, those of Palenque, and, on the other, those of Quirigua and Copan, to which in the intermediate region are joined the ruins of Menché Tinamit and some others less well known. Maudslay, in a short paper which he wrote for Nature in 1892, calls attention to the fact that the colossal figures on the stelæ of Copan represent female deities exclusively, in contrast to the Yucatec reliefs, on which male and warlike forms predominate. In this connection I would like to point out that the principal deity worshiped in the territory of Acalan was likewise a female; that the next largest city, which stood farther down on the Usumacinta, bears the name Ciuatecpan (Zagoatezpan, Ciguatepecad), "palace of the woman (the goddess)"; that, likewise, the mightiest city in the center of Tabasco, which Cortes and Bernal Diaz call Zagoatan, Zaguatan, is actually called Ciuatlan, "the city of the woman (the goddess)"; and that also the only place which Landa mentions on the Laguna de Terminos, Tixchel, "to the aged goddess", seems to have been a place for the worship of a female deity.

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[a] Villagutierre y Sotomayor, v. 4, p. 262.

[b] Menché was actually only a certain village at the foot of the north side of the holy mountain Vatunchu, and on the left bank of the river Cacuen; but Remesal mentions all the villages under the collective name of Menché, which later in Villagutierre are called villages of the Chols.

[c] This change of c into ch appears in different names, for example, Vatun-Chu=idolo derecho, where *Chu* stands for Maya *Ku;* and also in a specimen of the language transmitted to us in Villagutierre, v. 3, chap. 2, Chamay tzam bucanà xaguil Jesu Christo tut Santa Cruz umenel ca tanal, murió,estendido en su cara de este palo que se llam la Santa Cruz Nuestra Señor J. C. por nuestros pecados.

[d] Petermann's Geographische Mittheilungen, 1893, p. 6.

[e] The word Chorti itself only means "the language of the Chols", as the l of the Chol becomes r in Chorti.

Copan, Quirigua, and Palenque lie beyond the limits of the present treatise. Their prosperity was evidently temporary, caused by certain trade combinations, and for a time by the resultant conditions of accumulated wealth and power. It had doubtless already passed away when Cortes entered this region. The intermediate territory was probably always on a lower plane of governmental, social, and material development, although in pre-Spanish times it was never as low as it afterward became on account of the entire cessation of traffic and the subversion of all existing conditions in the surrounding regions. As the above statements show, we had, then, in ancient times two nations existing side by side, distinct, though closely related one to the other. Of the two the Mayas have preserved their nationality to the present day, while the other, the Chols, appear to have been absorbed, partly by the former and partly and chiefly by the neighboring Qu'ekchi.[a] Here, as in other regions, notwithstanding original differences of race, similar conditions of environment and extensive mutual intercourse have produced a fairly uniform picture of civilization. This fact is at once seen by comparing the descriptions of Chol settlements in the north of Cahabon, given by the old Dominican monks, with that which Doctor Sapper gives of the Lacandons on the lower bank of the Rio de la Pasion. But it is also shown in several other details. At the conquest of the rock city in the Laguna del Lacandon, as the chronicler expressly mentions, no idols whatever were found, for the Lacandons worshiped the sun only (el cuerpo solar), and brought their offerings and sacrifices to the sun itself and not to any representations of it, differing in this way very distinctly from the Itzaex and other tribes of those mountains, who had countless idols, statues, and images of metal, stone, and wood, with many superstitious customs and diabolical ceremonies.[b]

The same statement is made in another place concerning the Acalans and Lacandons. Similarly, the Dominican monks reported that they had found no idols at all, either of stone or any other material, among the Chols in the north of Cahabon. Sacrifices of black wax and other inflammable material were made, and chickens and other birds were occasionally sacrificed, as well as blood, which the Indians drew from themselves by piercing their tongues, their ears, their temples, or the muscles of their arms and legs. But the Indians said that they made these sacrifices to the woods and the high mountains, the dangerous fords of the rivers, the road crossings, and the lakelike expansions of the rivers. In fact, the fathers found a place of sacrifice on the summit of the mountain over which they had to pass on their return journey, where a fire was evidently kept burning, fed by the wax and copal offerings of passers-by. There were, besides, places of worship in the villages, consisting only of a round structure or (in the temple or meetinghouse) of a couple of stones upon which the wax candles and the copal were burned.[a] In the ermita of the Lacandons Doctor Sapper likewise found no idols whatever, but only a "low table upon which wax candles appeared to have been burned" and the singular sacrificial vessels in which wax, copal, etc., were offered.[b]

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[a] Sapper, in Petermann's Geographische Mittheilungen, 1893, p. 8.

[b] Villagutierre y Sotomayor, v. 1, chap. 2.

Peculiar clay vessels were found some time ago in this extensive region, which has lately been made more accessible by the felling of timber along the Usumacinta and the Rio de la Pasion. These vessels are distinguished by a face mask of a rather stereotyped form, which is placed on the rim. In the Guatemalan exhibit in Madrid there was a series of such vessels displayed, and their origin was given as from Usumacinta. The Royal Museum of Ethnology received from Consul General Sarg two such vessels with a similar label, one of which is represented by *b*, figure 13. An exactly similar vessel is found in the museum at Copenhagen, said to have come from Peten (*b*, figure 14). No such vessels are known to come from other parts of Guatemala. The museum in Copenhagen possesses two similar vessels of somewhat varying but probably related forms (*a* and *c*, figure 14), which bear the general label "from Tabasco". Charnay found vessels like *a*, *b*, and *c*, figure 13, in great numbers in the chief temple of Menché Tinamit, near the idol and in almost every room.[c] He copies two of them, and since the face mask of one is distinguished from the other by a very prominent nose he supposes that these two types represent, perhaps, two different races. Charnay considered these vessels to be prehistoric. We have to thank Doctor Sapper for the knowledge that the Lacandons still make such vessels to-day and bring wax and copal to their gods in them. Doctor Sapper saw these vessels in the great ermita of the settlement of Izan, and he collected fragments of them in the ruins of Menché Tinamit, "where the Lacandons were accustomed to meet once a year to celebrate their festivals by balché feasts and peculiar ceremonies, and to offer sacrifices to their gods in various buildings, especially in a three-storied building distinguished by beautiful reliefs and a large sitting stone idol".[d]

I have had some of the fragments which were collected by Doctor Sapper copied in *e* to *f*, figure 13, while *d* shows a specimen which was given to the Royal Museum from the Ecuadorian exhibit at the Columbian Exposition in Chicago, and which is evidently of similar origin. In the latter, as well as in the different fragments sent in by Sapper, thick masses of a waxy or resinous substance were found. On the outside, as it seems, all the pieces were originally smeared over with a white earth, which usually nearly covered even the prominent details of the face mask.

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[a] Remesal, v. 2, chap. 19.

[b] Ausland, 1891, p. 893.

[c] Les Anciennes Villes du Nouveau Monde, p. 381.

[d] Ausland, 1891, pp. 893-894.

Shapes like those of the vessels represented here were naturally not an original invention. One can imagine that they originated in vessels like *a*, figure 14, and that the latter shape arose from the need of distinguishing the back from the front. But one can also consider them as survivals of whole-figure vessels, which seems to me more

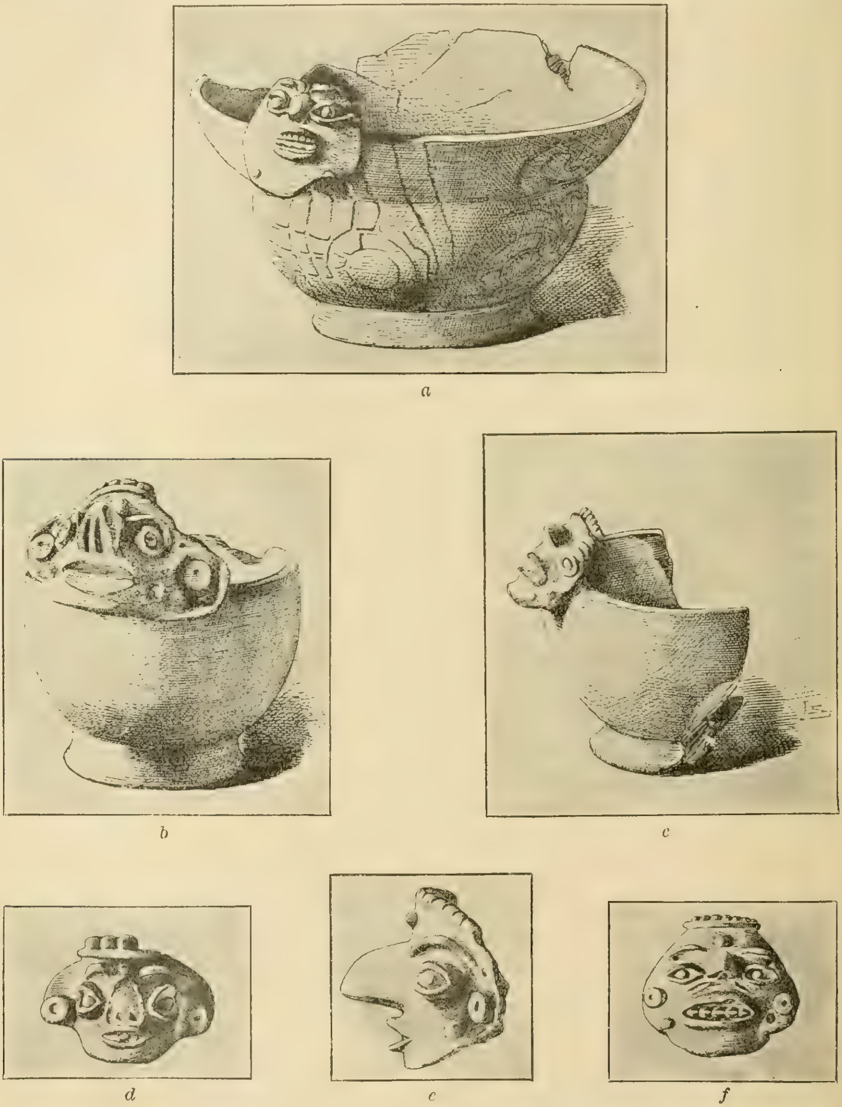

FIG. 13. Bowls from Guatemala.

probable. The inclined position which was given to the face masks in the vessels of the Lacandons proves that the original shape can not have been an erect figure like those of the Zapotec figure vessels and the vessels of Ranchito de las Animas. They are, it would seem, more like the vessels represented in *d*, figure 23, and *a*, figure 24, below that is, animal figures whose bodies form the hollow of the vessel. The human face which our vessels show might have originated as a substitute for the animal head. It seems more probable to me that the human face held in the open jaws of the animal on the vessel in *d*, figure 23, and similar ones, as well as in numerous small clay figures of Yucatan, in the stone monuments of Menché Tinamit, and elsewhere, has finally become predominant. This would best explain to me the projecting band by which the face mask of our Lacandon vessels is bordered above the forehead, which is wanting only in the mask of *c*, figure 13.[a] This, then, would represent what remains of the animal jaw, and the erect, comblike object above it the relic of a tuft of feathers, which rises in most of these figures above the crown or the nostrils. The vessel shown in *c*, figure 13, which, instead of the band above the forehead and the comblike, erect object, shows only a notched edge of the forehead, appears to represent the last stage of this development.

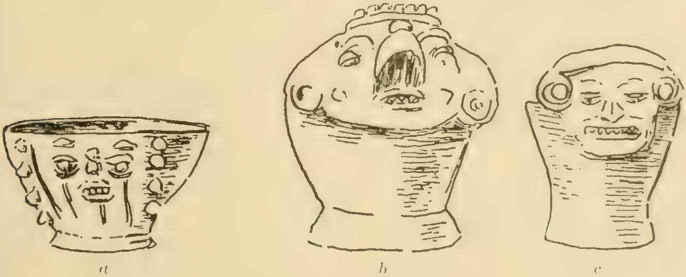

FIG. 14.—Pottery vessels from Guatemala.

I need not especially dwell upon the fact that the face masks contain only things which have long since gone out of use, which the makers of these vessels no longer had before their eyes, and which they merely repeated in stereotyped fashion. Neither the ear pegs, nor the knoblike objects resting on the cheeks (cheek pegs?), nor the knob, which is difficult to explain, placed above the root of the nose, nor the deep cuts which outline the upper lip in *f*, figure 13, are used to-day among the Lacandons. Like the Lacandons themselves, these vessels, fossilized, as it were, represent the remains of a long-vanished epoch of civilization.

The territories of the Chols and the Lacandons would to-day adjoin, on the south, the lands of the Qu'ekchi and their kin, the Pokonchi.

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[a] In *a*, fig. 13, the whole of the part referred to is broken off.

These are the cultivated regions of the Vera Paz, open to Christian civilization and populated to this day to some extent. Here we find in the west, in the valley of the Chixoy, the ruins of Salinas de los Nueve Cerros and those of Chamá. Doctor Sapper is inclined to ascribe both these to the Chols, without of course expressing more than a supposition on this question.

From the former place, where, according to Doctor Sapper's statement, a pretty sculpture, with some hieroglyphs, was found in a mound having well-preserved burial chambers, the Sapper collection contains two grinding slabs, two stone rings, a pottery vessel, and three pottery plates. The grinding slabs are of natural gneiss or mica schist of slight thickness (maximum, 3 cm.). The larger of the two has a rubbing surface of 52 by 35 cm. Of the two stone rings, the inner diameter of the larger is from 4 to 5 cm., and the ring is 5½ cm. broad and 5 cm. thick; the other has an inner diameter of 2½ to 3½ cm.; the breadth of the ring is 3 cm., and the thickness somewhat over 3 cm. The larger one is smooth on the upper and lower surfaces and rough on the circumference. Both were perhaps used in a game resembling the chunky game of the Indians of the southern United States. The pottery vessel (*a*, figure 15) has a height of 15 cm., and the diameter at the mouth is 13 cm. It was well baked and carefully smoothed, and then received a red coating, upon which was traced a network of black lines; but the coating is rubbed off in many places. The plates (*b*, figure 15) have a diameter of 22 to 25 cm. and a height of about 6 cm. They are also of well-baked clay, rough on the outside and furnished with a light-red coating on the inside.

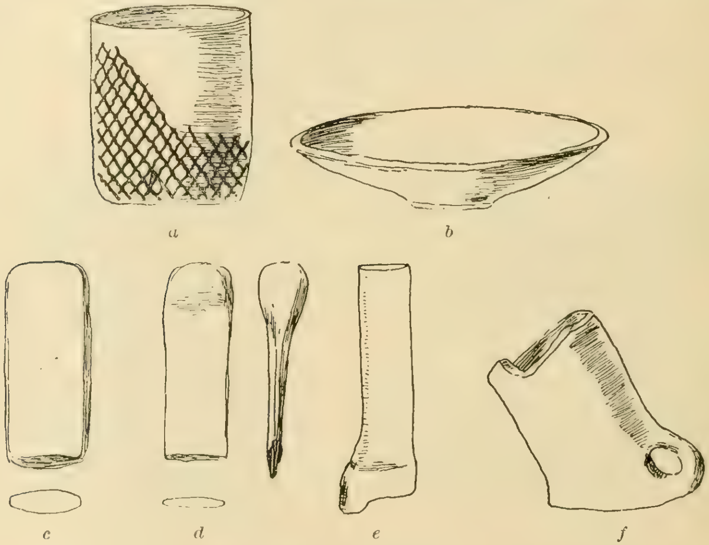

FIG. 15. Pottery vessels and other articles from a Guatemalan mound.

Farther up in the valley of the Chixoy, where the Salba empties on the right, lie the ruins of Chamá, where the excavations of Mr Dieseldorff have yielded such fine results. According to the information which he has given about them in the Zeitschrift für Ethnologie, there were on the left, as well as on the right, bank of the Salba several plazas (courts or squares inclosed by walls), above which rise artificial mounds of the familiar truncated pyramidal form. In the pyramid on the north side of the plaza, distinguished by him as the "lower" one, which, if I understand rightly, is on the left bank of the Salba, he found, among a layer of potsherds nearly two feet in thickness, a dark resinous mass in which were embedded different specimens of stone, small polyhedric slabs of iron pyrites, and disks of a sort of slate. The small disks of iron pyrites, which Dieseldorff would prefer to explain as mirrors, probably served as mosaic incrustations of utensils or ornaments (ear pegs or similar articles). The stone disks which Dieseldorff designated as sacrificial plates are provided with holes and connecting grooves which doubtless represent guides for cords.[a] They are, perhaps, ornamental disks like the large disks which we find in Mexican picture writings on the fillets worn on the forehead by different deities, especially by the sun god (see below, *b*, figure 28), and in a similar manner on different stone heads of Copan.[b] He found under this resinous layer a grave formed of stones, in which, near the dead, who were buried in a sitting posture, were found a jaguar's skull, a ring made of a mussel shell, and five pottery vessels—one painted jug, two cup-like painted vessels, an unpainted pot, and a three-footed bowl.[c]

Mr Dieseldorff found similar conditions in the northwest mound of the upper plaza, on the left bank of the Salba. He could not personally complete the excavations, but others excavated after him, and various painted vessels were found near the dead. A very interesting drawing of one of them Mr Dieseldorff sent to the Berlin Anthropological Society.[d] Lastly, Mr Dieseldorff found, in a pyramid which forms the southern end of a plaza on the right bank of the river Salba, under a layer of stone, a quantity of vessels of various shapes embedded in a viscous clay, but all of them were shattered by the fall of the stone layer.[e] "Mingled with the vessels were found the remains of various human skeletons, whose recumbent posture, with the head toward the south, was still clearly recognizable. Various stone specimens and a small polyhedral slab of iron pyrites were found among them; but the resinous mass over the burial chambers in the other two cases was entirely lacking here.

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[a] See the photographs in Zeitschrift für Ethnologie, 1893, v. 25, p. 377.

[b] Maudslay, Biologia Centrali Americana, Archæology, pt. 1, pl. II.

[c] Of these the painted jug is reproduced in Zeitschrift für Ethnologie, v. 25, 1893, p. 378, and one of the painted jugs, same volume, pl. XVI, fig. 1.

[d] Zeitschrift für Ethnologie, 1894, v. 26, pl. VIII.

[e] Three of these are reproduced in the Zeitschrift für Ethnologie, a vessel with the god in the snail shell, v. 25, 1893, pl. XVI, figs. 3, 4, and two others with the figure of the bat god, in the same volume, p. 374, and v. 26, 1894, pl. XIII.

These discoveries are especially interesting because the painted vessels belong among those which, partly by reason of the character of the figures, but especially by reason of the hieroglyphs which are found on different ones, are proved to be akin to the Maya manuscripts and sculptures of the great ruin cities of Central America and Yucatan. Such vessels have also been found in other parts of Guatemala, and this fact rather contradicts the statements of the authors, who, while they lay stress on the fact that the Mayas of Yucatan and Peten had "signs and letters with which they wrote their histories and noted their ceremonies, and the order of sacrifices to their idols, and their calendar", nevertheless mention nothing of the kind concerning the races of Guatemala. The isolated statement of Zorita that he was convinced from the paintings of the natives of Utatlan that their ancient history dated back eight hundred years rather indicates picture writings of the nature of the historical codices of the Mexicans.

The locality of Chamá is quite near the region in which occur ruins of Maya character or sculptures with hieroglyphs. At least four of the vessels which Mr Dieseldorff described in print bear a fairly uniform character, although they were found in three different places, and if they were not manufactured in this locality they must certainly have all originated in the same region. The hieroglyphs conform in general to those of the reliefs and manuscripts, though it is not possible to connect them with particular manuscripts or reliefs. But several of the pictorial representations, however, seem to refer to certain conditions peculiar to Guatemala.[a] Whether these vessels were made in Chamá itself, or whether they were brought there in trade, can only be decided when not mere single fragments, but the entire contents of the graves and the earth surrounding them are made known or become accessible for study, as has been done by Mr Strebel. That the place of manufacture can not be very distant, however, must, it seems, be accepted as certain.

The eastern provinces have especial importance in the Qu'ekchi region. In Cahabon, as Stoll learned from Professor Rockstroh,[b] a part of the ancient Chols were settled, and three barrios of this village at that time still claimed the region on the upper Sarstun and to the north of this river as having belonged to their ancestors. Doctor Sapper has been unable to find traces of the Chol language in Cahabon. Still, the dialect of the people of Lanquin and Cahabon differs from that of the Qu'ekchi of Coban. They likewise differ in certain peculiarities in the building of their houses and in their burial customs.[c]

Doctor Sapper has investigated a few of the caves in this eastern region, which he considers quite ancient settlements. In Campur he excavated a small cave which is about 10 meters deep and whose floor slopes inward. Four meters from the entrance a wall, built of stone without mortar, runs obliquely through the cavern. Doctor Sapper found behind this wall some large stones, without recognizable significance or connection, which may perhaps have been hearthstones or seats. There were, further, remains of pots, most of them without decoration. One fragment had a hole drilled under the rim, doubtless for a cord by which the vessel was carried. A fragment of the rim of a thick vessel showed linear decorations scratched on it. But near by were also found two feet, belonging to vessels, in the form of animal heads of the types copied in *a* and *b*, figure 16, apparently of the same

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[a] See Zeitschrift für Ethnologie, 1894, v. 26, p. 577, and following; 1895, v. 27, p. 27.

[b] Stoll, Guatemala, p. 359.

[c] Petermann's Geographische Mittheilungen, 1893, pp. 7, 8.

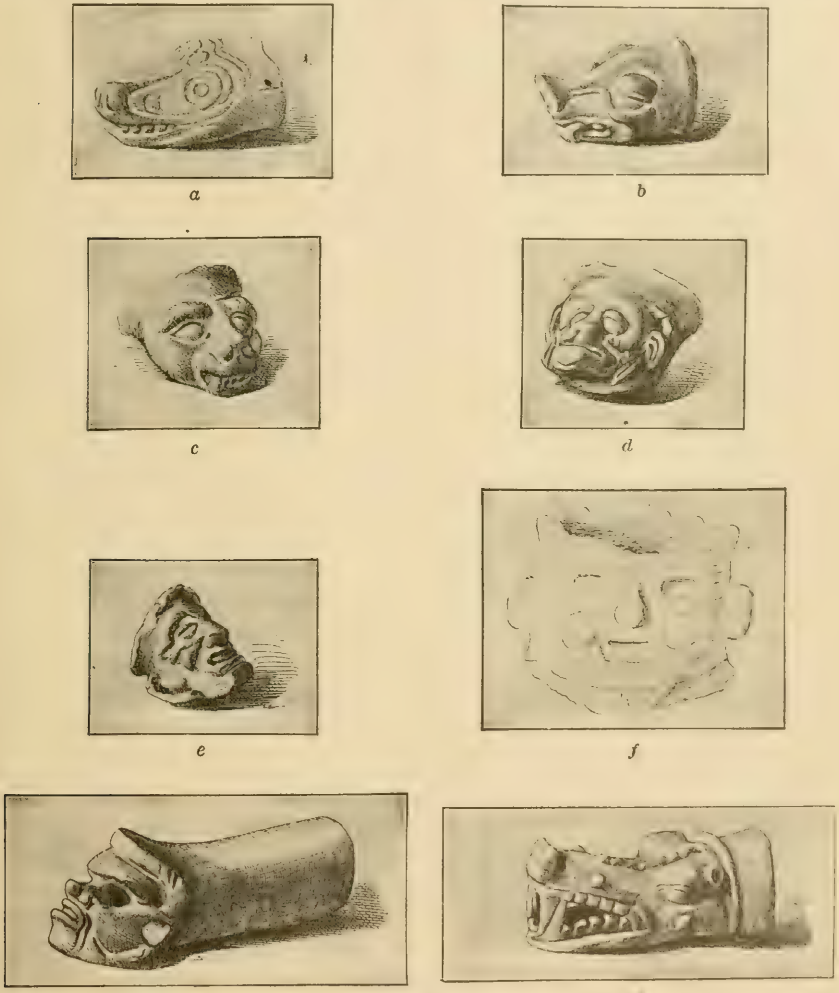

FIG. 16. Pottery vessels in the form of animal heads, Guatemala.

material as the other vessels. There was, further, a pottery stamp with a simple geometric or meander pattern; also clay balls, which Doctor Sapper calls blowgun balls, but which, it is more likely, came out of the hollow handles of incense spoons, and may be designated as rattle stones. There were found two fragments of stone hatchets, one of flint, the other of a hornblendic quartz rock; a whetstone, a flint arrowhead, various small obsidian knives, a piece of rock crystal, countless fresh-water shells of the Melania family, a land snail, fragments of skeletons of birds and small mammals, among which the paca and other small rodents were recognized. There were also teeth of the jabali, tepescuinte, and other tusked animals, a jaguar's tooth, and noticeably, also, a piece of crab's claw, and a piece of a sea urchin's shell with pores. It was without doubt the wretched abode of a people who lived by the chase. But I believe that there is no special reason to consider it very much older than the other settlements which have become known in that region.

A second cave in this region, which was searched by Doctor Sapper, is that of Ceamay. Fragments of a large thin-walled vessel were found there, the exterior of which was decorated with a sort of mat-braid pattern scratched in fine lines.

The finds of Chiatzam seem also to have a peculiar character. Besides a beautiful lance point of flint and a fine obsidian knife, 25 cm. in length and 3 cm. in breadth, the Sapper collection contains fragments of stone jugs, which seem to have had two small handles on the circumference, with a boss between them, and which are decorated at the base of the neck with a double row of small grooved circles. Further, there are worthy of notice thick coarse fragments, with deeply scratched serpentine lines which form definite figures, and also thick potsherds decorated in very deep lines with symbols and hieroglyphs, almost like certain vessels from Tabasco which were placed in the Trocadero Museum by M. Charnay. A pottery head from Chiatzam will be discussed below.

From the central parts of the Qu'ekchi territory, the district of Coban, Zamac, San Pedro Carchá, and San Juan Chamelco, the Royal Museum possesses, partly in the Sarg and partly in the Sapper collection, a large number of pottery objects and fragments, mostly small, as well as some stone objects.

In his contributions to the ethnography of the Republic of Guatemala[a] Doctor Sapper calls attention to the difference in the form of the millstones for grinding maize used in the different parts of Guatemala. While in the highlands they use clumsy millstones and heavy cylindric hand rollers projecting on each side beyond the edge of the millstone and held at the ends (manufactured about Santa Catalina, not far from Quetzaltenango), there were used in Peten, in Vera Paz, and in southeast Guatemala lighter millstones with smooth hand rollers shorter than the breadth of the millstone and held in the middle (manufacturing center at Jilotopeque). The first form of hand rollers with a circular section (in many cases becoming nearly square or very much flattened on one side) is also the customary form in the plateau of Mexico. It is represented in the Guatemalan collection of the Royal Museum by a fragment of a hand roller from the ruins of Q'umarcaah Utatlan, the ancient Quiché capital. A hand roller which Doctor Sapper has sent from the ruins of Bolonchac in Chiapas—that is, from the Tzental territory—shows the smooth, shorter form. It is 25 cm. long by 9 cm. broad and 1½ cm. in its greatest thickness (see *c*, figure 15). A similar but less regular form is shown in a hand roller of the Sapper collection from Panquip, or Las Pacayas, a region which belongs to the Pokonchi territory. But, besides these, there occurs in the ancient settlements of Vera Paz a remarkable form of long hand crusher, flattened on two sides almost like a board, with thick knoblike ends which serve as handles and must have extended beyond the sides of the millstone (see the fragment *d*, figure 15). Such crushers are in the Sapper collection from Campur and from the neighborhood of Coban. In one remarkable piece in the Sarg collection from Cebaczoos (*e*, figure 15) these ends are even developed into a sort of handle. I must remark, however, that this flat boardlike form, which differs in a very conspicuous way from the cylindric or quadrangular forms of the Mexican plateau and the highlands of Guatemala, is also found in a specimen of the Strebel collection, which is said to have come from the neighborhood of Misantla in the State of Vera Cruz. Several other hand rollers of the Sapper collection which come from Pilon de Azúcar, hence from the Misantla region, show the origin of this form—namely, that the flattened side is cut out, as it were, of the original cylindric tool, the ends remaining thick and knobby.

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[a] Petermann's Geographische Mittheilungen, 1893, p. 12.

Among the coarser pottery, I will next mention two pieces, one of which came from San Juan Chamelco, the other from the locality of Santa Cruz, which is soon to be discussed in detail. These specimens recall in a certain way the shoe vessels, as they, too, are shaped (see figure 15) suitably to be pushed into the ground. On the whole, they resemble the neck of a jug, the mouth of which has been closed and forms the bottom of the vessel. The Sarg collection contains an actual small shoe vessel. It is said to have come from Coban. But this vessel is so out of place and reminds one so much of the types peculiar to Central America (Nicaragua, Costa Rica, and Chiriqui) that I am inclined to think it was accidentally brought here, but I will await further discoveries before deciding.

In the Sapper collection there are fragments of ruder vessels from the neighborhood of Coban, with thick, wavy, indented rims. Some are likewise embossed with decorations and have grooved circles, like those from Ceamay. There are some polished ones, with dark, thin walls, ornamented with circles and bosses of rather elegant appearance, from Petet, near Coban. There are also some with thick walls and a yellowish-red coating bordered with broad white stripes, from San Juan Chamelco. There are, besides, painted fragments with different patterns in black and red on a yellowish-red ground.

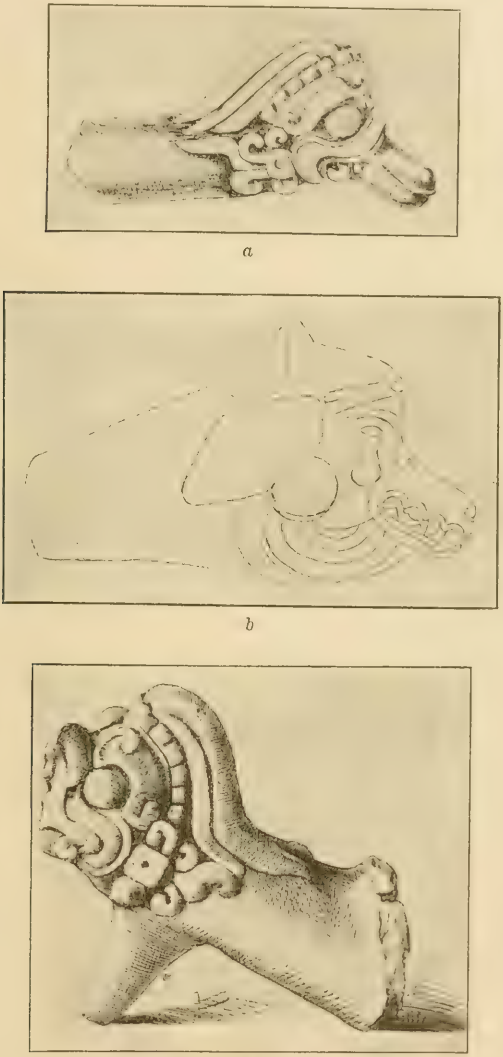
Three-footed dishes, so-called cazuelas, with heads of animals as feet, appear to have been much used, together with simple dishes, flat-bottomed or slightly rounded. One whole dish of this kind is in the Sapper collection from the neighborhood of Coban, and there are also broken-off feet from San Juan Chamelco and other places. A reddish-yellow or dark-brown coating seems to have been preferred for the vessels. The feet of vessels in the form of animal heads partly recall the types in the Strebel collection from Cerro Montoso and those from Cholula. Among the shapes represented I mention the alligator, coati(?), jaguar, monkey, and human face (*a* to *e*, figure 16, which are taken from the Sarg collection).

I further mention larger juglike vessels. As in other regions, a face was frequently placed on the necks of these. The Sapper collection contains a ruder fragment of this kind from Campur, and a thinner-walled one from San Juan Chamelco, which I have reproduced in *f*, figure 16. The circular protuberances on the cheeks are noticeable here. The lips were added separately, but are unfortunately broken away. It is not impossible that a beard may have been indicated, similar to the one depicted in the vessel below (*d*, figure 23). The whole face has a coating of light-red ocher.

One must not confuse the head-shaped ends of incense-spoon handles, which are also frequent, with the feet of vessels in the form of animal heads. The former preferably show a reptile head (*h*, figure 16, from Sacuyó in Doctor Sapper's collection), or they have a human head with empty eye sockets communicating with the hollow interior of the handle (*g*, figure 16, from Petet, near Coban, Sarg collection). Here, too, appears a certain analogy with the region of the Strebel collection. I remark here that in the Yucatan collection of the Royal Museum a similar head, with hollow eye sockets, is used to decorate the front of a cylindric vessel.

Many of the feet of vessels and, commonly, the hollow handles of incense spoons, contain little clay balls, which give these articles the character of rattles. A large number of such little clay balls were collected by Doctor Sapper in the cave of Campur.

The fragment from Coban (*c*, figure 17) evidently also belongs to an incense vessel, which was not held in the hand, but was meant to stand. The head, whose ornamental finish strongly recalls the style of the Copan sculptures, is doubtless intended for an animal head. But what kind of an animal it is meant to represent unfortunately can not be determined from the fragment, as the front of both jaws is broken off. Behind the angles of the jaw a human ear, with a square ear plate, is indicated, which often occurs in animal figures, especially in such as figure in mythology. In the small collection of antiquities which Mr



a

b

c

FIG. 17. Pottery fragments from Guatemala.

Dieseldorff brought over some years ago and which at present is kept at his house in Hamburg is found the handle of an incense spoon, with an animal head at the end, which corresponds almost exactly to our c, figure 17, and which is complete. I have taken pains to make a drawing of this object from a few small photographs which I possess of this collection through the kindness of Mr Dieseldorff, and have reproduced it in *a*. The nose is remarkably long, and one is almost tempted to think of the Tzimin-Chac, the horse of Cortes, which remained in Peten and was worshipped as a god. But I believe another comparison lies nearer. In *b* I reproduce in outline a large piece of sculpture from Santa Lucia Cozumalhuapa, which is found in our Royal Museum and which I believe corresponds to the head in *a*, and probably also to the one in *c*. This stone head is especially interesting, because it is represented with weeping eyes or, perhaps more correctly, with eyes fallen out of the sockets.

In the Mexican calendar writings, whose models doubtless came from the south, the empty eye sockets are the special sign of a certain mythologic personage to whom the interpreters give the name Xolotl. This is a person who has no place in the worship of the plateau tribes and is evidently a stranger to them. Something mysterious and unnatural pertained to him. By the interpreters he was called the "god of monstrosities", and "monstrosity" is probably the most suitable translation of his name. The empty eye sockets are explained by the Mexican legend which says that, when in Teotihuacan the gods had decided to sacrifice themselves in order to give strength and life to the newly created sun, Xolotl withdrew from this sacrifice and wept so that his eyes started from their sockets. This explanation was invented only to make the unintelligible characteristic of a strange personality comprehensible to themselves and others. In an earlier work I have sought to make it clear that, since in Zapotec the hairless native dog is called pèco-xòlo, by Xolotl was originally meant the lightning beast of the Maya tribes, the dog. A dog, or, more correctly, perhaps, a coyote, is, in fact, in certain picture writings, the direct equivalent of Xolotl. But I was later convinced that in the above-mentioned Zapotec expression xòlo is only the attribute, and in this case designates a special, really unnatural, kind of dog. Thus the dog or coyote has become the representative of Xolotl in a roundabout way, by a secondary train of thought—perhaps, indeed, through the false interpretation of an unknown, uncomprehended animal form.

I am inclined to see the true Xolotl in an animal which the Zapotecs likewise designate by xòlo, in full, as pèche-xòlo,[a] suggesting the sense of "sinister being", also known to the Mexicans under this name, their tlaca-xolotl.[b] This is the tapir, whose mythologic rôle is established, yet very little is known of its peculiar nature, and whose well drawn figure we see in one of the interesting relief tiles of Chiapas. If the tapir be really Xolotl, the empty sockets must be characteristic of the tapir, and we ought to recognize the tapir in *b*, however improbable this identification may be to the eye trained to observe natural phenomena.

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[a] "Pècho-xòlo", "danta animal silvestre", Juan de Córdoba, Vocabularío Zapoteco.

[b] Sahagun and Hernandez describe under the name of tlaca-xolotl an animal which is said to live in the provinces of Atzaccan, Tepotzotzontlan, and Tlanquilapan, "not far from Honduras". It is as large as an ox, has a long snout, large teeth, hoofs like an ox, a thick hide, and reddish hair. It lives upon wild cocoa, fruits, and leaves of trees, lays waste the maize fields, and is caught in pits and eaten. The name tlaca-xolotl is moreover nothing more than a translation of the Zapotec pèche-xòlo, for in Zapotec pèche is probably a secondary form of peni, "human being", "rational living being" (Mexican tlacatl) as mache is a secondary form of mani, "animal". The description of Hernandez contains some conspicuous errors. He translates "pero de la forma de una persona", which in Sahagun refers only to the preceding "los dientes y muelas muy grandes", that is, "very large incisors and molar teeth, but of the same shape as those of men" by "humana pæne facie".

A quantity of other fragments show the same style and the same conception as *a* and *c*, especially those with conventionalized and ornamentally developed serpent heads, many of which seem to be found in this region. I have copied in *a*, figure 18, a fragment from San Juan Chamelco and in *b* another from Santa Cruz. The human leg, which is seen in the latter fragment under the edge of the upper jaw, probably belongs to a complete human figure which issued from the jaws of the serpent —a very common representation which we see in the cedar-wood tablets of Tikal and numerous other sculptures. These are usually clay tablets with quite high and boldly executed reliefs. Some have a peglike attachment on the reverse side. Perhaps they belong to the kind of tablets which I have represented in *i*, *k*, and *l*, figure 20, and which I interpret as celestial shields. On the last page of the Dresden manuscript and in the Perez codex the celestial shields terminate in half figures, especially heads of crocodiles. It seems more probable to me that they are fragments of complicated figure structures resembling those of the Copan stelæ.

The material of these quite numerous fragments and also of the fragment in *c*, figure 17, is a hard-baked clay of brick-red appearance. The fragments convey a strong impression of having all come from the same place of manufacture.

The majority of the heads and figure fragments of this region are made of this same red clay. I reproduce next, in *c*, figure 18, the cast of an ancient pottery shape, which Doctor Sapper obtained in the region of Coban without being able to fix the exact place of discovery. It is probably a female figure with parted hair falling down at the sides of the head, a lock of which, drawn forward from behind, hangs far down over the shoulder. This long tapering lock of flowing hair in front is likewise a distinguishing characteristic of women in the Dresden manuscript, and we see it, moreover, in the vase painting from Rio Hondo, which is reproduced below in *c*, figure 26. The form *c*, figure 18, wears large square ornamental tablets in the ears. A cloth is wound about the body immediately below the breasts, and around the neck she wears a cord on which is strung a large quadrangular prismatic stone bead with a round bead at each end. A head (*b*, figure 19) which comes from San Juan Chamelco evidently belonged to a similar figure. Here, too, the hair is parted, but bound above the forehead by a tupuy, "headband". Two other modes of dressing the hair,

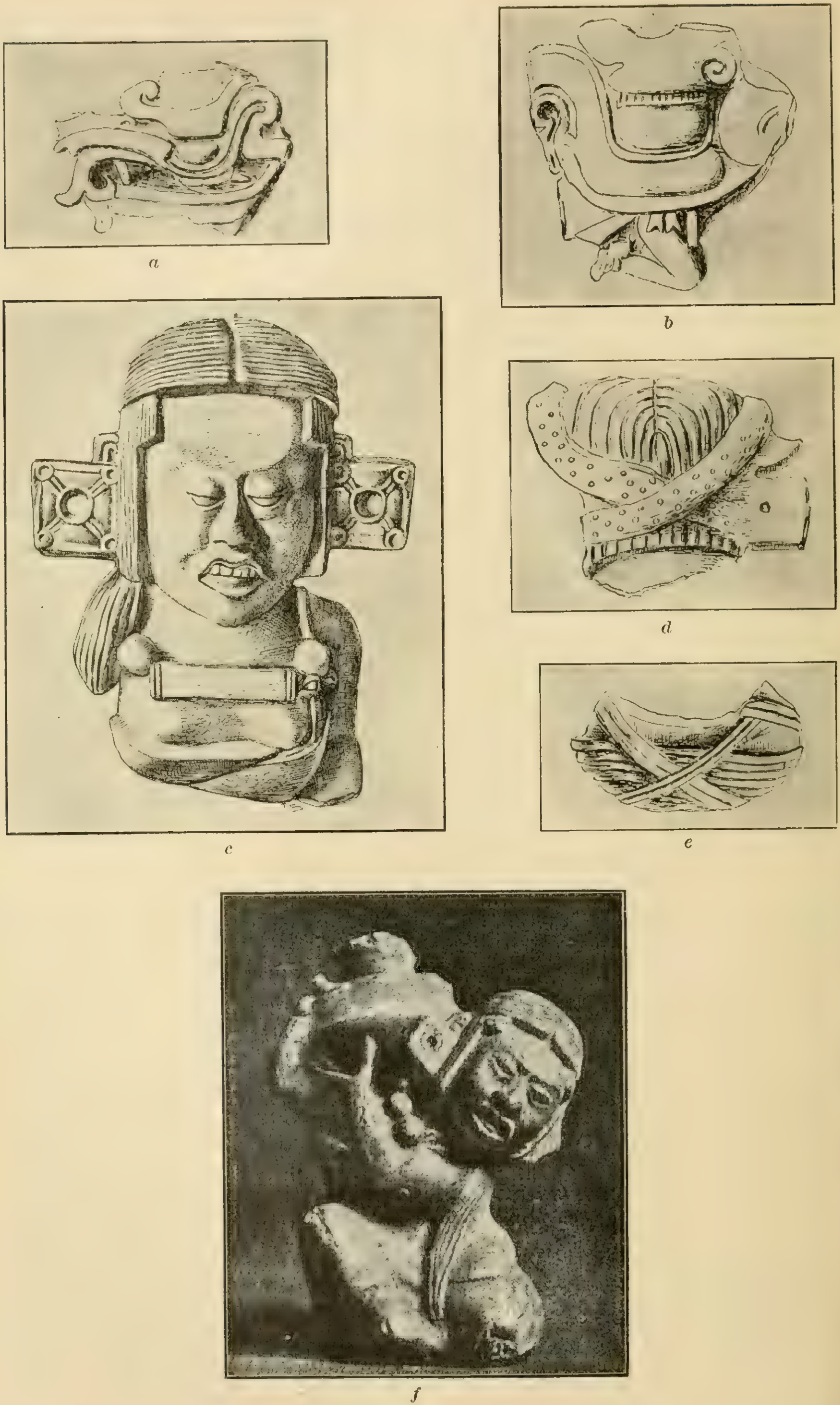

FIG. 18. Pottery fragments from Guatemala.

doubtless also belonging to female figures, are given in *d* and *e*, figure 18, one a back, the other a front, view. The latter strongly reminds us of the festive headdress of an Indian woman whose picture Stoll gives in his contributions to the ethnology of the Indian races of Guatemala.[a] These two fragments came from San Juan Chamelco. Both the cloth wound around the body and the neck decoration are also very distinctly seen in the fragment shown in *h*, figure 19, which likewise came from San Juan Chamelco. Here again on the neck cord are strung two quadrangular prismatic beads on each side of a small mask, which must have been heavy, for it was held by a separate band or strap passing over the shoulder. A small pottery pipe of the Sarg collection, which comes from Coban (*f*, figure 18) shows a woman with a cloth around the body, carrying a large water jug on her shoulder, who has the same way of dressing the hair as *e*, figure 18, also large square ear plates.

The forms *a* and *c*, figure 19, are male heads. The latter, which comes from San Juan Chamelco, is characterized by a large nose bar. The former, which comes from Sesis, is distinguished by a clearly defined and strongly modeled mustache and a foldlike elevation on the forehead above the root of the nose. I saw a mustache marked in a similar way on a head in the Dieseldorff collection. A mustache and beard are likewise clearly present in a relief (*e*, figure 19), from Petet, near Coban, now in the Sarg collection. In the remarkable vessel from Chamá which Mr Dieseldorff described in the Zeitschrift für Ethnologie[b] all the persons of the group at the left of the picture are distinguished by a more or less prominent growth of hair on the upper lip and chin. I believe that we have here, if not an anthropologic distinction, certainly an ethnologic one, and, at the same time, proof that the heads and reliefs which I have copied here were made in the same region as the painted pots of Chamá or, at least, in some adjacent region, which increases the probability that none of these articles were importations, but were made on the spot.

The two reliefs *e* and *f* belong to the Sarg collection. The former was found in Petet, the latter in Chicojoito, near Coban.[c] Unfortunately, both are fragments and must each be assigned to a separate group of figures. They are male figures. That at *e* distinctly shows a mustache and beard; *f* shows them less clearly. The manner of dressing the hair seems to be the same in both. It is long and hanging down behind, and is cut off over the forehead, just as the Dominican monks described it as being worn among the Qu'ekchis and the Chols. It was, as we know, a very difficult task for the monks to persuade their

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[a] Internationales Archiv für Ethnographie (Leiden), supplement to v. 1, pl. II, fig. 15.

[b] 1894, v. 26, pl. VII.

[c] I am familiar with similar quadrangular pottery reliefs bordered by broad stripes from Teotitlan del Camino in the State of Oaxaca. They all appear to be parts of square seat-like foundations of pottery figures.

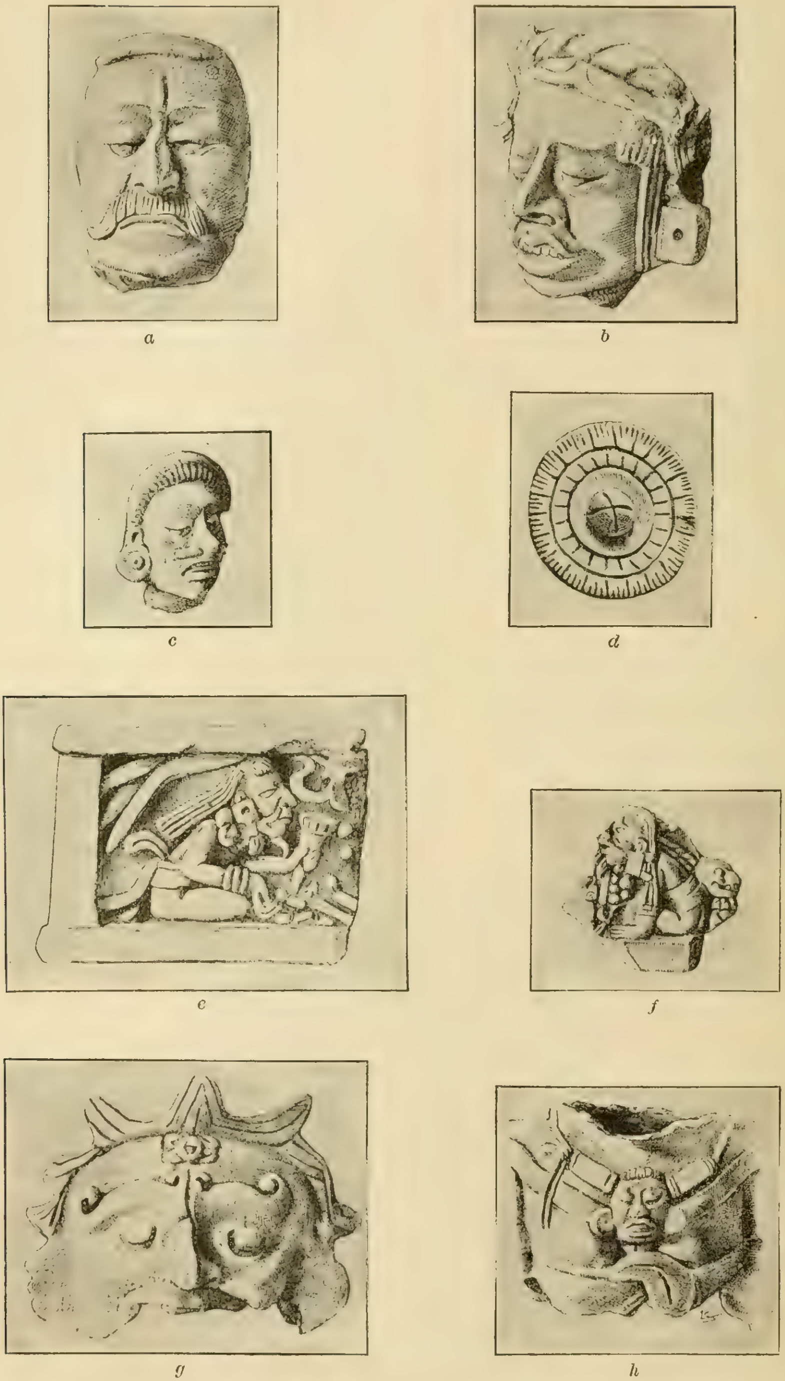


FIG. 19. Face-form vessels from Guatemala.

heathen pupils to have their hair cut in a Christian and civilized manner. In the figures on the reliefs we are considering the hair seems to have been removed from the middle of the head, like a tonsure, and from the back of the crown decorations of feathers (quetzal feathers) hang far down the back. For ornament both figures wear square ear plates and necklaces of large round beads. They are clothed with the breechcloth (Mexican maxtlatl, Maya ex), the knot of which is large and plainly seen in *e*, while in *f* it is covered by a skull which this figure wears on a cord hanging over the back. The action is difficult to explain, since the opposite figure is wanting. An offering or a presentation appears to be expressed. I can say nothing further in explanation.

The head in *g* was obtained by Doctor Sapper in Chiatzam. It was made of the same brick-red clay as all of the above-described heads and fragments, and is the first which we can identify with a known mythologic character. The hair standing erect in flaming tongues, and especially the eye with the four radiations on the forehead, lead us to recognize in it Kinich Ahau, the sun god. The piece is unfortunately incomplete, the lower half of the face being absent. But the Dieseldorff collection contains two heads which represent the sun god and have a very peculiar characteristic on the lower half of the face. Mr Dieseldorff permitted me to make a sketch of these. They are *a* and *b*, figure 20. Both come from the neighborhood of San Juan Chamelco. They can be recognized as representations of the sun god by the large, peculiarly formed eye, whilst *b* is distinguished also by the hair, and *a* by the cross over the forehead, which is a variant of the Kin sign. Both show, as the most striking peculiarity, teeth filed to a point in a certain manner. This is precisely the peculiarity which occurs with great regularity in the Copan sculptures of the sun god. A glance at *c* and *d* will suffice to confirm this. The form *c* is taken from Stela H, *d* from Stela A (Maudslay's notation). Both are clearly designated as representations of the sun god by the Kin sign on the forehead. But we also see this same peculiarity in the heads of the sun god which stand among the initial numerical hieroglyphs of the stelæ in the sixth place, directly before the name of the katun (10 Ahau), which thus denote the units, that is, the single days (see *e* and *f*, which are taken from Stelæ A and J). The beardlike lines indicated below the head of the sun god are without doubt the u mex kin, "the beard of the sun", "the sunbeams". Wherever in this place, instead of the head of the sun god, the simple Kin sign stands, as on Stela M of Copan and on the altar slab of the first cross temple number in Palenque, this sun beard is regularly indicated (see *g* and *h*).

I should further like to call attention to the fact that the representations of the sun god found in the manuscripts by no means show the teeth filed to a point in the same characteristic way. Therefore the

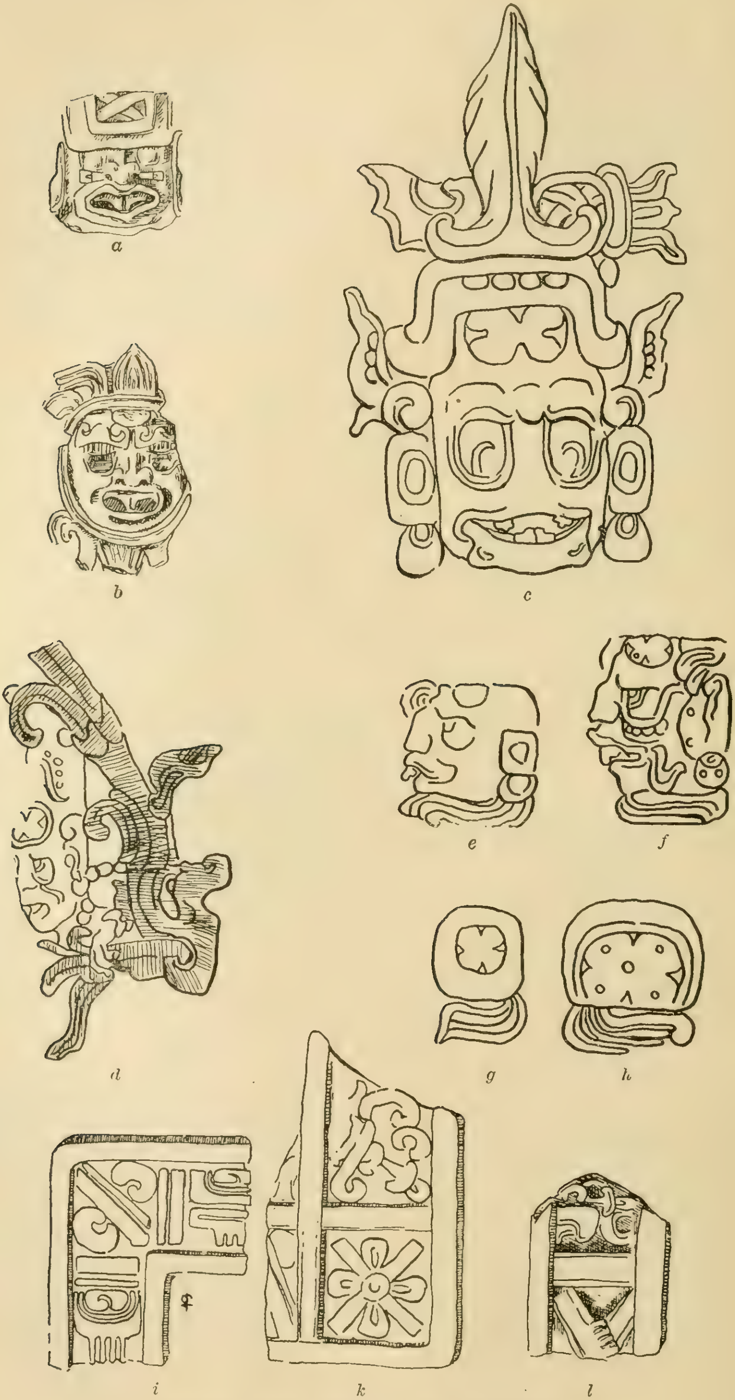

a
b
c
d
e
f
g
h
i
k
l

FIG. 20. Pottery ornaments from Guatemala.

fact that this is so distinctly brought out in the heads of San Juan Chamelco is of especial weight. It proves that the ancient inhabitants of Vera Paz were under the immediate influence of the civilized nation which had erected the monumental structures of Copan, perhaps were identical with them; at any rate, that they were closely akin to them. Further, I will not omit to mention that this peculiar manner of filing the teeth is seen on the pottery pipes of the Strebel Ranchito de las Animas collection, the so-called "Totonac priests", which are sitting, standing, or carousing figures, dressed in a peculiar capelike overgarment.

In this connection a few other small antiquities, some of which are contained in the Sapper collection, and some in the Dieseldorff collection, from this region, seem to me to be of importance. These are red pottery tablets with a rectangular border, on which, between raised intersecting moldings, is a series of consecutive symbols executed in relief. I copied a fragment of the Sapper collection, seen in *l*, and attempted, in *i* and *k*, to reproduce some of the symbols contained on these fragments from photographs of the Dieseldorff collection. I believe that in these fragments we have celestial shields executed in relief, that is, they correspond to the tablets (square or rectangularly bent), bearing the signs Kin, Akbal, and variants of the same, which occur frequently in the Maya manuscripts, and which Förstemann would like to interpret as symbols of different stars or planets. Messrs Sapper and Dieseldorff formerly attached special importance to the little rosettes (*d*, figure 19), which occur frequently in the region of Chamelco. I consider them fragments of larger figures, and do not believe that any deeper meaning can be attached to the number symbols on them, excepting, of course, the four parts into which the center knot divides. On the latter there are traces of blue color, as in the ear plates of *b*, figure 19. The rosette itself appears to have been painted crimson. The ear plates might, perhaps, be considered to represent turquoise mosaic, and the same might be true of the knots of the rosettes.

A few pottery figures (pipes) of the Sarg collection, said to have come from the cave of Zabalam, near Coban, are of a peculiar character (*a*, *b*, and *c*, figure 21). The material is a brick-red clay, which is somewhat more sandy than in the fragments described before, painted in certain places partly light-blue and partly white. The whole construction has something remarkably modern about it; the first, *a*, shows a figure clothed with a maxtlatl and a loin cloth, wearing large round ear pegs and a cylindric stone bead on a cord around the neck, and adorned with great winglike feather ornaments projecting from the sides of the head. The figure is represented in a dancing posture before a sort of tree, whose branches are made of unripe ears of maize still in the husk. Such an ear of maize also rises high over the head of the figure. Both at the right and left are seen figures of animals (squirrel and bird) nibbling the ears of maize. There are also animal figures erect on their haunches at the feet of the principal figure.

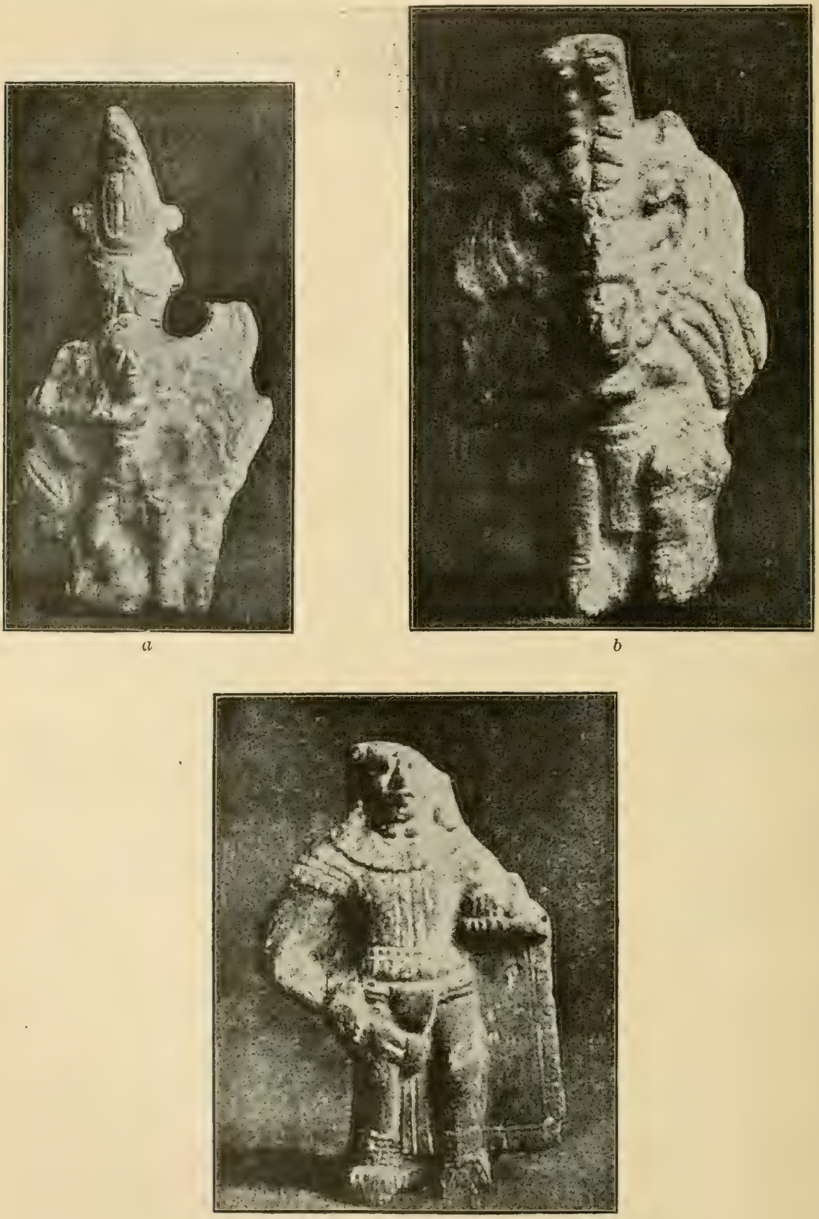
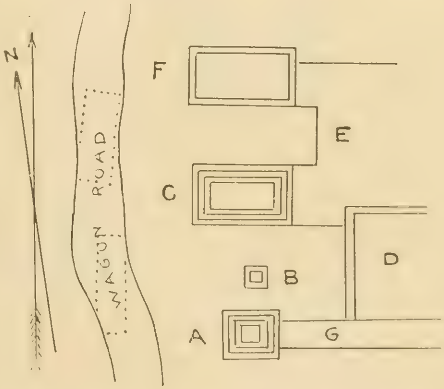

a *b* *c*

FIG. 21. Pottery figures from Guatemala.

The second piece, *b*, is a sitting figure, similarly costumed, with a large headdress, the chief feature of which is a high braided structure, perhaps an imitation of an ear of maize. The tree with the ears of maize and the animal figures is lacking. The third piece, *c*, one might actually suppose to be the representation of a Spaniard if this idea were not contradicted by the ear ornament, the broad bead anklets, and, especially, the maxtlatl. The figure may, perhaps, be thought to be clothed with an ichcauipil, or quilted armor, unless we have before us, which is also very probable, a Christian cacique in Spanish costume. Under the left hand there is an object which looks almost like a Spanish shield, but is perhaps a piece of cloth with a broad border. It is this last figure which suggests the idea that in all three pieces we have fantastic images of recent date. On the other hand, I find in the photographs of the Dieseldorff collection an ear of maize, which seems as if it were broken from a figure similar to the one in *a*.



The fragments which Doctor Sapper found in his excavations in La Cueva, near Santa Cruz, undertaken with Mr Dieseldorff, form an especially valuable part of his collection. This ancient settlement, the plan of which is here given, lies at present near the boundary line between the districts in which the Qu’ekchi and the Pokonchi languages are spoken. Doctor Sapper prefers to ascribe it to the latter tribe, because the plan of the settlement as well as the finds especially differ in many respects from the undoubted Qu’ekchi finds of San Juan, Chamelco, etc. I am inclined to accept this opinion. Isolated pieces, to be sure, agree with the undoubted Qu’ekchi finds. I have also described above some among the latter. Owing to the geographic proximity of the two places of discovery this is not to be wondered at.

The mounds A, B, C were excavated by Messrs Sapper and Dieseldorff, and the chief discoveries were made in the southern mound, A, a small terraced pyramid constructed of earth and stone (called in the Indian dialect of that place tzak, that is, "masonry"). The finds are, in the main, simple, undecorated vessels. Yet single richly decorated ones were found among them, as, for example, one which Doctor Sapper some years ago gave to Mr Lorenz Eyssen, then in Guatemala. Among the others the next of importance are the vessels in the form of kneeling female figures, whose removable heads form the covers of the vessels. Three such vessels were found in the mound. One fell to the share of Mr Dieseldorff when the results of the excavations were divided, and he had the great kindness to present it to the Royal

Museum when he was in Berlin. The second was given to Consul-General Sarg in Guatemala some years ago by Doctor Sapper. The third was unfortunately lost on its way to Guatemala.

Of the plainer vessels some are cup-shaped, some are jar-shaped, while some of them have handles, and others have not. The size, too, varies greatly. But they had all been covered, it seems, with a shallow bowl, or had simple disklike covers (see *b*, figure 22). The vessel *a*, figure 22, is made of light-gray clay and seems to have been without a colored coating. Various others are not only carefully smoothed, but have a coating of yellowish-red or brown. A small vessel in the shape of a bird, *c*, was likewise found among them, but I am not informed whether it, too, had a cover and whether its contents were the same as those named above.

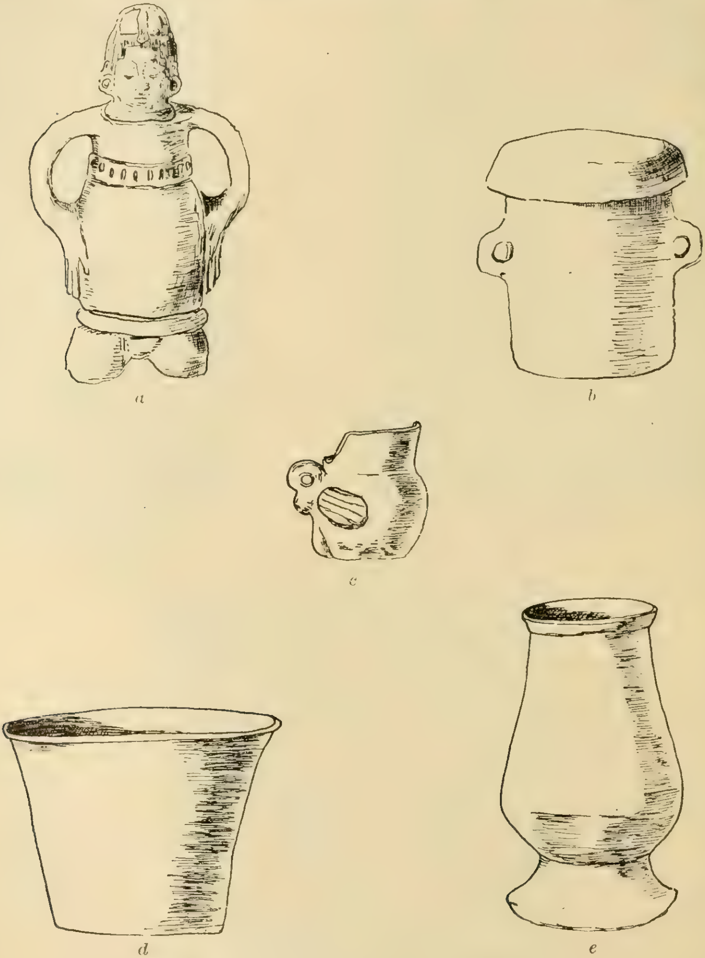


Fig. 22. Pottery vessels from Guatemala.

The middle mound, B, and the northern mound, C, were less rich in finds. From the latter the Sapper collection contains a cup-shaped vessel, with a wide opening, about 10 cm. high, *d*. From the middle one it contains a cup-like vessel, 17 cm. high, *e*, of a form frequent in Yucatan and Tabasco. Both have the reddish-yellow coating which is quite common among the clay vessels of this region and of the neighboring Yucatan and Tabasco.

The figure vessel, *a*, contained an obsidian knife and the phalanges of the left little finger of a human hand. It is possibly, even probably, merely accidental that the figure which forms the vessel has only four fingers on the left hand. In the same way, it seems, all the other vessels which were found covered with a bowl or a cover contained obsidian knives and finger joints. Some contained, in addition, pottery fragments, rattle balls, and pieces (feet) of clay figures. This fact, which I can not compare with anything among other sculpture finds of Mexico and Central America, seemed very strange to me at the first glance. Cutting off the finger joints is known to be a sacrifice to the deity in the sun dance of the North American Indians. The women of the Charrua and other neighboring South American races cut off single finger joints at the death of their husbands. But nothing of this sort has been known up to this time of the ancient races of Central America.

Neither do I believe it is necessary to suppose a sacrifice in this case. On the other hand, a certain passage in the Quiche tradition which is known under the name "Título de los Señores de Totonicapam" appears to me to contain a definite allusion to the custom which we are considering.

It is related that the Quiche, together with the kindred tribes of the Tam and the Iloc and the thirteen tribes of the Vuk ama'k Tecpam, by whom are apparently understood the Cakchiquel and the Tzutuhil, left their homes and went by way of Chicpach and Chiquiche to the mountain of Hacavitz Chipal. There the Tam separated from the rest and went to the mountain of Ama'k Tan, and the Iloc, together with the Vuk ama'k, settled on the mountain of U'kin, while the Quiche themselves remained behind on the Hacavitz Chipal mountain. Here the Vuk ama'k threatened them with war, but the Quiche, advised by their nagual, were able to defend themselves by magic arts against three successive attacks. The first trick played on the Vuk ama'k was by magic, to cause them to fall into a deep sleep, and when they were asleep not only to take away their weapons, but also to cut off their little fingers and little toes, so that when they awoke they felt so disgraced that they returned to their homes filled with shame.

In reference to this passage, I am of the opinion that these were spolia opima taken from slain enemies, which were buried in the various pots

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[a] Alli les acometió tan profundo sueño que no sintieron cuando nuestros padres les despojaron de sus arcos, flechas y toda arma y demas el dedo menique de piés y manos, de suerte que cuando acordaron, se vieron en estado tan afrentado, que se volvieron avergonzados á sus [illegible]

in the southern mound of the settlement of La Cueva, near Santa Cruz. It agrees very well with this explanation that it was the southern mound in which the pots with the obsidian knives and the finger joints were found, for the south was consecrated to the war god and to victory. This we see in the familiar picture of the Cortesian codex which represents the tonalamatl divided into four divisions, which, with the deities belonging to them, are arranged around the two gods

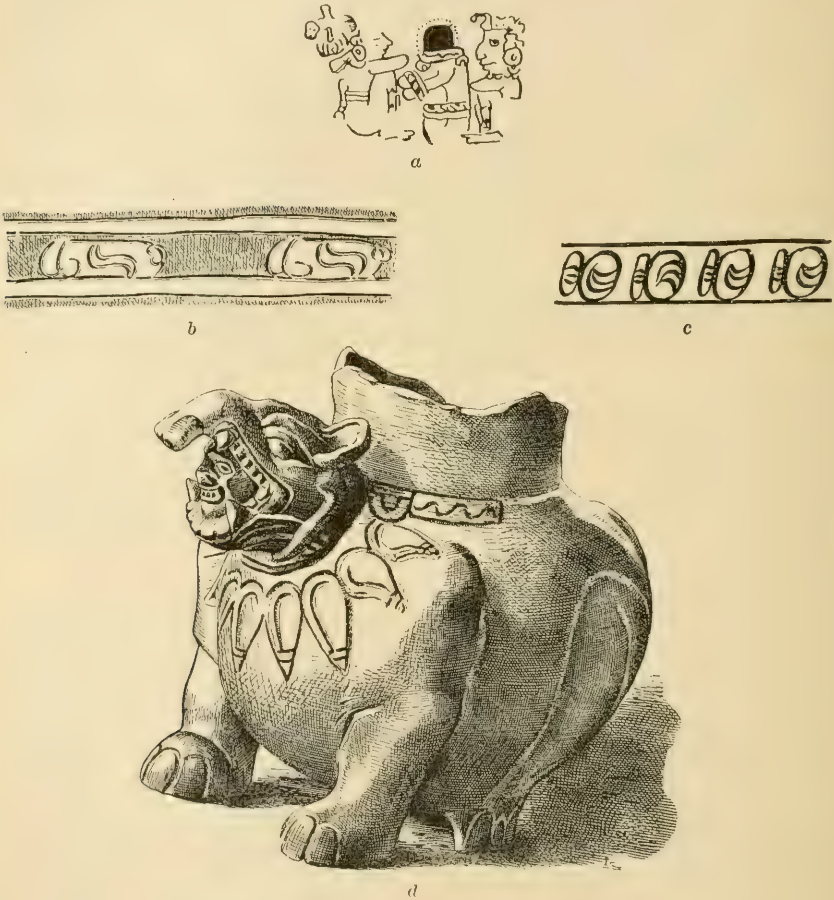

Fig. 23. Animal-shaped vessel from Guatemala.

of creation, forming the center. Here, in the last division of the tonalamatl, which consequently belongs to the south, the picture (*a*, figure 23) is seen showing the hieroglyph of the south (Nohol) and the war gods with the bound captive. That one is the division belonging to the south and the other the sign belonging to the south I have already pointed out in my paper on Mexican chronology.[a]

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[a] Zeitschrift für Ethnologie, 1891, v. 23, pp. 104, 105.

The settlement of Panquip, or Las Pacayas, belongs to the Pokonchi territory, where Messrs Sapper and Dieseldorff also made excavations. From this locality the Royal Museum possesses only a few fine obsidian lance points, one of flint, and a few pottery fragments, among them thin quadrangular tablets with perforations near the corners, the meaning of which is not clear to me.

There still remain some classes of antiquities which I have not yet discussed, because they cover a wider range of territory and because there is greater probability that they were imported articles of trade. These are the vessels covered with hieroglyphs and delicate painting and the green and gray enameled or glazed vessels.

The Royal Museum possesses a few fragments of vessels with delicate painting from this territory, and also from San Juan Chamelco. Two types, at least, are to be distinguished among them, and it seems to me that the same two types can also be recognized among fragments from the ruins of Copan.

As to the hieroglyphs, it is frequently impossible in a particular case to say whether we have before us a mere ornament or a hieroglyph, although, perhaps, in most cases a definite symbolic meaning must finally be ascribed to an ornament. Among the fragments of the Sapper collection from San Juan Chamelco the two ornaments or hieroglyphs shown in the cut, symmetrically repeated on a band running around near the upper edge of the vessel, are plainly to be seen. One (*b*, figure 23), is scratched on a vessel of dark color. The ornament and the two borders are painted in white. The ornament *c* is painted in red on a light, yellowish-white vessel. The former vessel appears to have no other decoration. Figures were painted on the second one, but, unfortunately, some of them are obliterated, and some are unrecognizable. I can find no analogy for these two ornaments among the familiar hieroglyphs of the manuscripts.

The existence of enameled vessels from Vera Paz is now also proved, partly by isolated specimens of the Sarg collection and partly by various fragments collected by Doctor Sapper in the ancient Indian settlements visited by him. Some of these vessels are greenish, some gray, and others, occasionally found in considerable quantities, are light-red. These vessels are distinguished from the well-known ancient American pottery by apparently having an actual glaze. As a rule they are beautifully made vessels in animal or human form, or they are face jars. From the Karwinski collection the Royal Museum possesses a fine piece of this kind, *d*, representing the pèche-xòlo, or tlacaxolotl, the tzimin of the Maya nations, the "tapir". Two others came into possession of the Royal Museum with the Uhle collection. One represents a parrot with open jaws holding a human face, like as-in *d*. The other has the form of a beast of prey, a pitzotl (coati) or something of the sort.

The Sarg collection contains the beautiful vessel from Coban (*a*, figure 24), which represents a toad, and another vessel of the same kind from Zamac, near Coban, which, it seems, is intended to represent a monkey, but the front part of it is unfortunately broken off. These vessels appear to be more frequent in Yucatan. The Archbishop of Merida, Dr Crescentio Carrillo y Ancona, describes a similar vessel, in

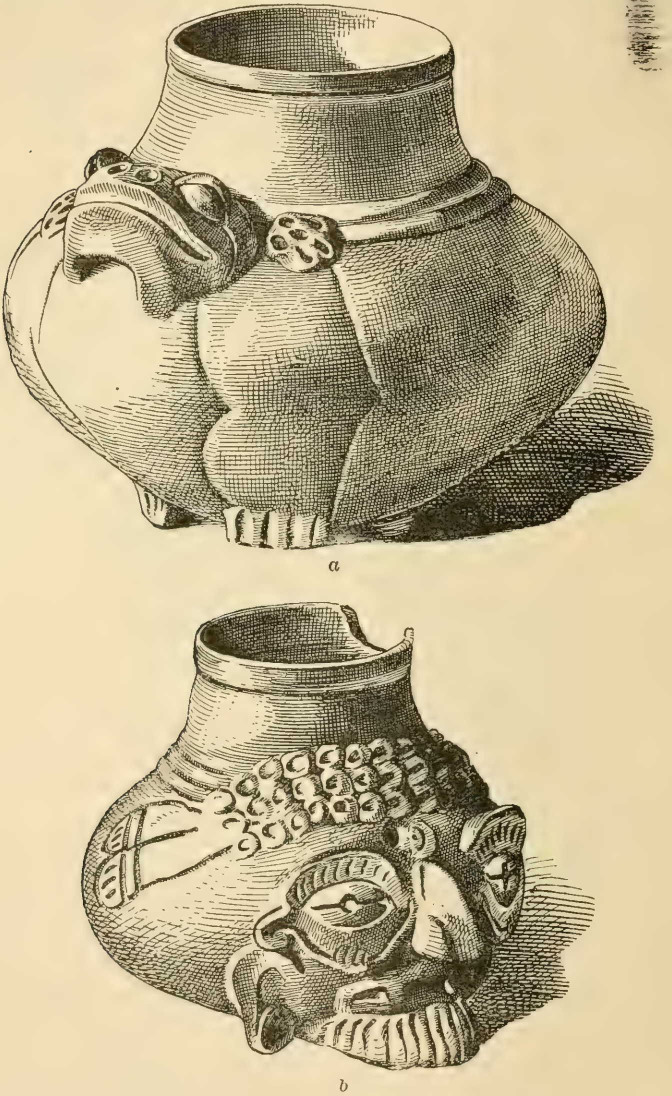

FIG. 24. Ornamented bowls from Guatemala.

the third volume of the Añales del Museo Nacional de Mexico, which was found when digging the foundation for a new building in Puerto Progreso, near Merida (*a*, figure 25). These pieces seem to have been carried far to the north. In the Strebel collection is found the curious specimen (*b*, figure 24), which comes from the region of Atotonilco and Quimistlan, and also belongs to this class of vessels. Several face jars with bearded faces were found in Yucatan. Maudslay copies a similar glazed one from Copan. Entirely similar fragments of apparently glazed vessels were found in the excavations made by Mr Strebel at Zoncuautla in the district of Coatepec of the state of Vera Cruz. I have hitherto been unable to determine what kind of glaze is on these vessels, as rare and beautiful pieces were always concerned which could not be sacrificed to chemical investigation. However, there is hope that Mr Holmes, of Chicago,[a] who at present is making a special study of these vessels, will throw light on this question. The broad geographic area within which these pieces are found proves that in them we have to deal with ware which was distributed by trade. Even to-day, isolated places of manufacture—as, for example, Chinautla in Guatemala—provide the whole region within a radius of many days' journey with pottery wares.

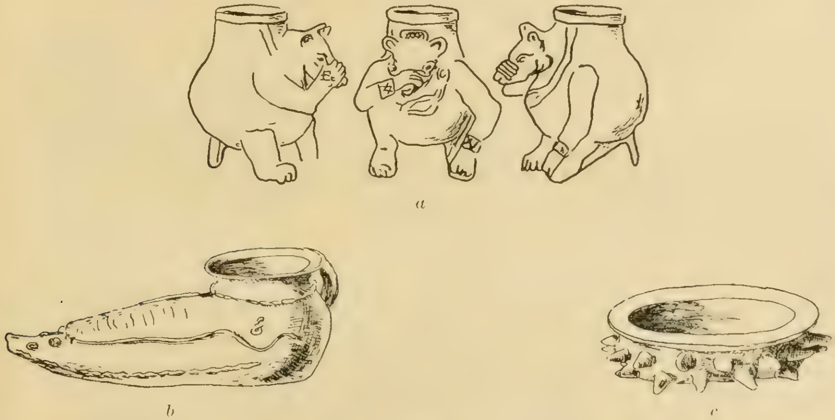

FIG. 25. Pottery vessels from Guatemala.

In ancient times beautiful pottery vessels were a much-prized ware. Landa tells of the Mayas that custom required them at the close of a feast to give to each guest a mantle, a carved stool, and a pottery vessel, as delicate and costly as the host could afford. In the present state of our knowledge it can not be stated in what region these glazed vessels were made. Only so much can be said, that it must have been a region of the tierra caliente, or lying very near it, where the tapir, the parrot, the coati, the monkey, and the toad of the tierra caliente were known.[a] My suspicion turns to Tabasco or the neighboring Chiapas. In ancient times the former was a famous commercial center, and the industrial centers can not have been far from there.

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[a] Now of the Bureau of American Ethnology. ED.

If we sum up what the authentic discoveries from the territory of Vera Paz, the lands of Qu'ekchi and Pokonchi, teach us, it follows with certainty from the abundance and variety of objects and from their artistic conception and peculiar manner of decoration that the ancient inhabitants of these regions were a people of advanced civilization, and that their culture was of the same peculiar stamp to be met with in the monuments of Copan and Quirigua, although in an entirely different degree of grandeur. At the same time it seems that we must conclude from various evidences that the active intercourse existing between Laguna de Terminos and Honduras in ancient times, to which doubtless the above-named places owed their prosperity, also made itself felt in the valleys of Vera Paz by influencing their progress and by stimulating and developing them.

It would be a grateful task to determine whether for the other Maya tribes of Guatemala, who were especially prominent in its political development, the Quiche and Cakchiquel, the Mame in the north, the Pokomam in the south, a similar close connection with those brilliant centers of Maya culture can be determined, and, on the other hand, to make plain the possible differences which existed. Unfortunately, I have not the material to do so. I can only say this, that the few originals and copies from those regions with which I am familiar are in fact of a different character, and have not the artistic perfection which we see in the finds from Vera Paz. Circular bowls, 6 cm. deep and 16 cm. in diameter, are characteristic of Amatitlan, a locality in the Pokomam territory. These vessels have a broad, flat, turned-over rim, and their outer surface has two or three rows of long teeth (see *c*, figure 25). A toothed vessel of another form somewhat higher and smaller, and with rather long feet, was obtained by Consul-General Sarg in Nebah—that is, in the Ixil (Mame) territory. Shoe vessels, which are properly called xe lahuh, "foot of the ten", seem to be peculiar to the place called Quetzaltenango, in the Quiche territory; *b*, figure 25, is a copy of one of these vessels. This differs from the familiar shoe vessels of Nicaragua chiefly in the pointed tip.

I know of a few beautiful pottery heads and a fragment of a finely smoothed vessel from Saculeu, which is in the department of Huehuetenango, and thus belongs also to the Mame territory. On these are seen the signs reproduced in *a*, figure 26. The ornament on the left side, an eye with a double (upper and lower) eyebrow, also appears on fragments from Copan.[a] There is, further, a vessel now in the University Museum in Philadelphia said to have come from the region of Huehuetenango, which, I believe, I saw at the exposition in Madrid, the hieroglyphs of which Professor Brinton has reproduced. They are actually the same characters which we see on the stelæ of Copan, executed in very curious and, in places, rather carelessly drawn lines—namely, the katun sign in the same two modifications which occur, for instance, on Stela C of Copan, and among them are also katun numerals and a row of other hieroglyphs. In *b*, figure 26, I give the first two signs on the right side of this vessel, as I copied them two years ago in Madrid, and beside them the corresponding hieroglyphs of Stela A of Copan. Doubtless we are here concerned with a piece which came, either through trade or as a present, from the region of the Chols or Chortis in the western highlands, whose inhabitants were familiar with the art of writing. Finally, I will mention that one of the remarkable stone yokes a simple, undecorated one—that came into possession of the Royal Museum from the collection of Professor von Seebach, is said to have come originally from Quiche or Cakchiquel territory, namely, from Sololá. This would be remarkable, for the reason that most of the regions where these inexplicable articles have been found are on the Atlantic slope, in the present States of Vera Cruz and Tabasco.

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[a] Toad figures with the same indented warts on the sides of the neck as shown in the vessel (*a*, fig. 24), I have also seen in large vessels from Yucatan and in little pottery pipes of the Strebel collection which came from the region south of the city of Vera Cruz, on the boundary of Mistequilla, where excavations have recently been begun by him.

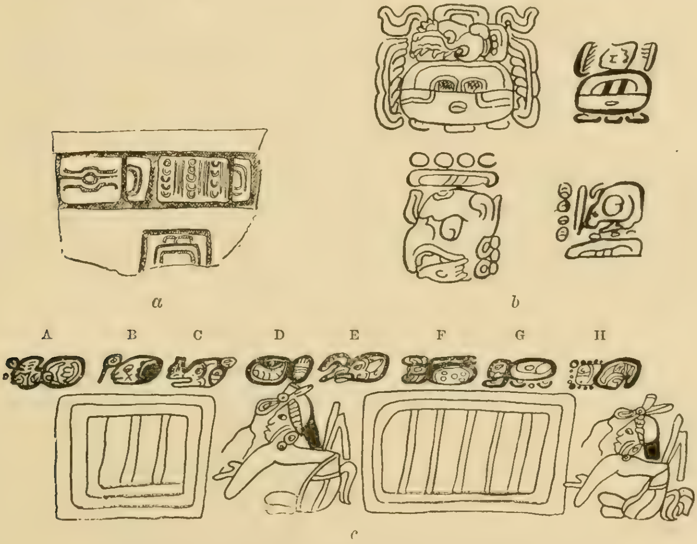

FIG. 26. Symbolic figures from Guatemalan pottery.

Wedged in between the Quiche and the Chorti tribes, separating the Pokomams from the kindred Pokonchis, there is found in the valley of the Rio Grande, or Motagua, and the heights rising above it, another separate territory whose extreme boundaries are formed by the region of Salamá on the one side and the Copan river on the other, where in ancient times a branch of the Pipils, a Nahuatl-speaking tribe, was settled. Stoll relates a local tradition which exists in Salamá, telling how these Mexicans were first brought from Tuxtla Grande in Spanish times. On this account the people of Salamá wear the same costume to-day as those of Tuxtla. This tradition did not seem very credible to Stoll himself. I am inclined to think that too late a date was given. An actual tradition may have existed that the people of Salamá came from those regions, but the immigration must have occurred in pre-Spanish times.

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[a] See Brinton, A Primer of Mayan Hieroglyphs, 1894, p. 107, fig. 63.

The spread of the Nahua tribe toward the south, according to my conviction, proceeded in general from Tabasco, for the Zapotec tribes have probably always formed a barrier in the way through Tehuantepec and the Sierra de los Quelenes, which Ahuitzotl, the predecessor of Motecuhzoma first succeeded in breaking. But from Tabasco the Mexicans must have penetrated at an early date to Chiapas and Soconusco on the roads which Bernal Diaz and his companions who settled at Coatzacualco easily found later. The Nahuas reached the valley of the Motagua, and farther Honduras, San Salvador, and Nicaragua, by the great overland road which Cortes traveled with his army. The Pipils of Escuintla are probably a receding stream of this migratory wave. A third branch must finally have found its way to the interioı of Yucatan. This is known from historical accounts in the books of the Chilan Balam, and to my mind is made still clearer by the reliefs of Chichenitza. On all of these three highways the Nahua tribes came into more or less close contact with the Maya tribes. An interchange of cultural elements doubtless took place, and probably resulted still more abundantly from the peaceful journeyings of Mexican merchants, not undertaken for the purpose of finding a permanent home. One of the most important and most interesting problems of Central American archeology is the question how this giving and receiving was distributed. We shall, however, not be able to approach the solution of this matter until carefully collected and complete archeologic material exists from these border regions of intermixture, where the Nahua tribes lived as neighbors of the Mayas. What remarkable disclosures may eventually be expected in this matter is shown by the interesting relief tiles from Chiapas in the Museo National de Mexico, which are published in the great illustrated work which the Junta Colombina de Mexico issued in commemoration of the four hundredth centenary of the discovery of America. And then, too, the magnificent monuments of Santa Lucia Cozumalhuapa certainly originated at just such a point of contact between Nahuatl and Maya civilizations.

The sketches of three vessels, which I reproduce below, came to me through the kindness of Mr Dieseldorff from the above-mentioned Pipil territory on the Rio Motagua. They come from the little place Rio Hondo, lying on the Motagua opposite the mouth of the Copan river, and belong to the collection of Mr B. Castañeda in Zacapa. The first vessel (*c*, figure 26) has a height of 15.3 cm. and a diameter at the bottom of 10.5 cm. and at the mouth of 16 cm., and the thickness of the walls is 4 mm. The second vessel (*t*, figure 27) is 17.2 cm. high, 13.5 cm. in diameter at the mouth, and the thickness of its walls is 5 mm. The figure and the hieroglyph tablet are repeated three times on the circumference of the vessel, but the drawing is badly injured by fire. The third vessel (*a*, figure 28) is 22.6 cm. high, the diameter measures at the bottom 12.7 cm., at the mouth 15.8 cm., and the walls are 6 mm. thick.

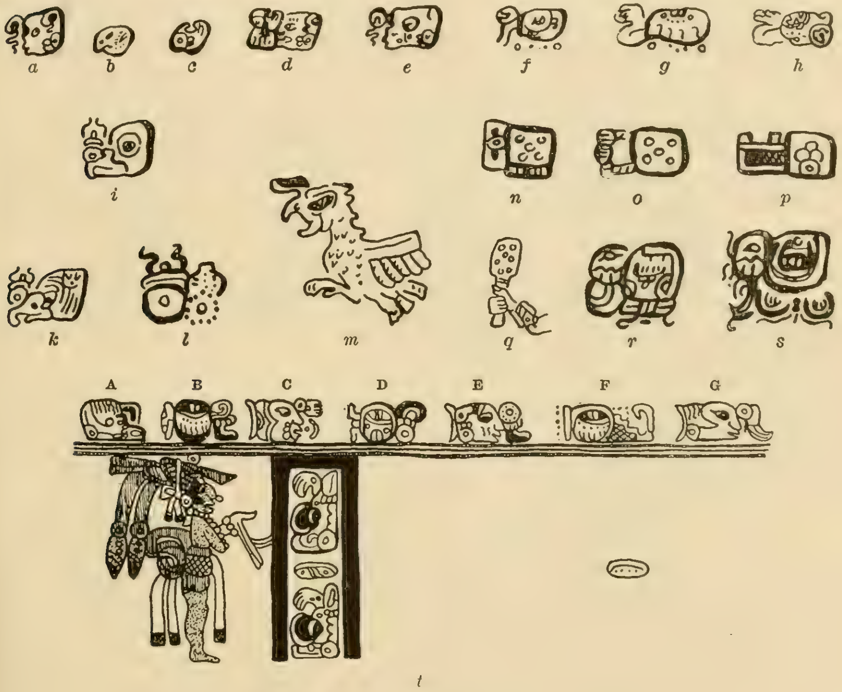

FIG. 27. Glyphs from Maya codices and design on Guatemalan vessel.

The first of these three vessels is of pure Maya character. The figures, as well as the hieroglyphs, might have been copied directly from a Maya manuscript. The second is also unmistakably of Maya character, though the position of the figure is decidedly stiffer. The third, however, has an especial character. The models of its figures can only be found in Mexican or kindred manuscripts (Mixtec and Zapotec), and what hieroglyphs there are differ in every way from the familiar forms in Maya hieroglyphs. If it is true of any specimen, we have in this vessel the artistic production of a nation foreign to the Maya soil. It is in all probability to be ascribed to the Pipils, the Nahua tribe, who undoubtedly lived here a long time before the conquest.

To begin with, the vessel of pure Maya type (*c*, figure 26), the personages represented on it are women. This is especially proved by the long wisps of hair flying down in front, which can be seen in quite similar fashion on the female forms in the Dresden manuscript. The position of the arms and hands is a favorite one in the figures of gods in the Mexican picture writings, especially in the Borgian codex and Codex Vaticanus B, which, however, appears also in the Dresden manuscript, for example, in the Moan bird, on page 11*a*. The raised or outstretched hand is evidently a gesture of speech or of command, which, in fact, and especially in this case, are the same thing, for tlahtouani, or tlautô, "the speaker", means the ruler, the prince. The clothing of the figures seems to consist of an enagua, a cloth wrapped about the hips like a petticoat and fastened about the middle of the body with a band. Those objects seem to be the ends of this band which are seen to rise above the enagua and fall down behind. The figures are represented sitting with crossed legs. Protruding from the enagua is the bare left thigh and below this the naked sole of the right foot, a typical position which is very often drawn in the Dresden manuscript. But the lines in our picture are so displaced as to give the impression that the drawing is not from life, but from a familiar picture repeated in a stereotyped way.

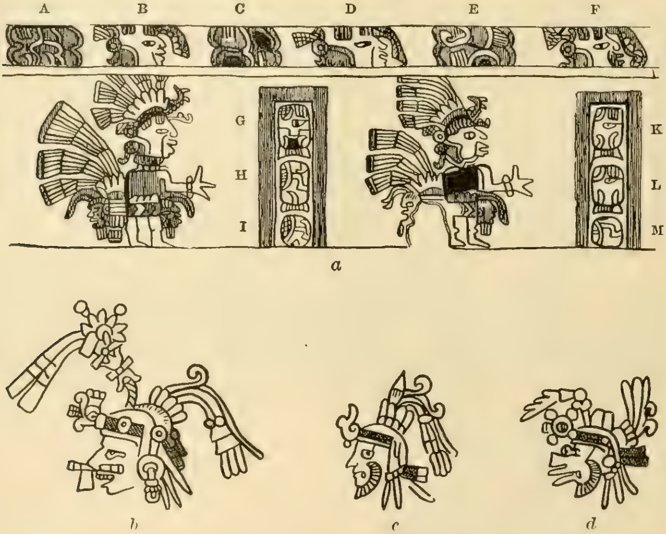

FIG. 28. Design on Guatemalan vessel and figures from Mexican codices.

The same impression is made in studying the hieroglyphs. I have every reason to believe that the drawing which I reproduce here is an exact copy. Yet I have the impression that the artist, whether man or woman, who painted these characters on the vessel was not conscious of the meaning of their different elements and lines, and therefore drew them with an uncertain hand. An exact identification is, of course, only possible in the case of a few. All eight hieroglyphs differ one from another, so the next question is, Where should we begin to read? The relative position of the hieroglyphs shows that they must be read from left to right. I believe we must begin with the hieroglyph which in the drawing provided by Mr Dieseldorff, (our *c*, figure 26), stands in the first place at the left. I will designate this by A.

I believe that two elements must be recognized in this first hieroglyph: First, the head of a woman (see the hieroglyph *a*, figure 27), but having a peculiar element which is contained in the day sign Eb, "broom", *b*; second, the day sign Manik, *c*, whose phonetic sound is chi, which is contained in the hieroglyph Chikin, "west". A combination of these two elements exists in the hieroglyph *d*, which is found on page 62 of the Dresden manuscript, in combination, to be sure, with a third element which has the form of the day sign Imix.

The second hieroglyph, B, must, it seems to me, refer to the hieroglyph *e*, which appears in the Dresden codex, page 12*b*, as one of the accompanying hieroglyphs of the death god in place of the hieroglyph *f*, otherwise indicated in this place. Hieroglyphs B and *e* are especially characterized as death hieroglyphs by the cross design on the cheek.

It is possible that hieroglyph D also refers to one of the hieroglyphs accompanying the death god, the one of which I have reproduced two variants in *g* and *h*.

The hieroglyphs C and E show the head of a bird which in both cases has a curious projection on the beak. One might think that the great vulture was represented here whose hieroglyph, *i*, *k*, is always drawn with a peculiar projection on the beak and which, in fact, is characterized by a fleshy growth on the cere covering the root of the upper mandible. I believe, however, that, at least in one of the hieroglyphs, it seems to suggest a bird which generally appears accompanying the black god. I have reproduced the whole of this bird in *m*, and its hieroglyph, as it is found in the Troano codex, page 4* *c*, in *l*. The bird probably represents the wild fowl of the forest region of the tierra caliente, which was generally called "pheasant" by the Spaniards, and for which the Maya has the two names cox and mut. The Mexicans designate this bird by the former name, and also by the word coxcoxtli. I believe that this bird must be mentioned in connection with a female deity known among the Mayas of Yucatan under the name of Yax cocahmut, in honor of whom feasts were celebrated in the Muluc years, which belonged to the north. From her they feared dryness and drought. The old women danced at her festivals, sacrificed a young female dog to her, and brought her a simple, unembroidered white garment. I think that it certainly follows from these characteristics that it was a form of the ancient earth goddess who was worshipped under this name. I call to mind that the earth goddess is also represented repeatedly in the form of a bird in the Borgian codex and the Codex Vaticanus B; that in Maya the word cox, or cocox, means not only "pheasant", but also "dry, withered, woody fruit", and that the mythical king of Colhuacan, where Ciauocuatl, the earth goddess, was tribal goddess, is called Coxcoxtli.

I find the sixth hieroglyph of our picture, F, again in *n* from the Troano codex, page 19**c*, where it appears interchangeably with the hieroglyph *o* as companion of the hieroglyph *p*. The latter hieroglyph, which is the leading hieroglyph in this passage, appears to me to express the offering of copal or incense. In the former I think I recognize the rattle which regularly accompanies such acts of worship. Compare the pictures of the rattle which I have given in *q*. I call to mind that in Mexican representations, both in stone and picture painting, and also in the Borgian codex and in Codex Vaticanus B, the earth goddess is always represented with the Chicauaztli, the rattle board, in her hand.

The remaining hieroglyphs of our picture, G and H, are not clear to me, but I notice that the first element of the hieroglyph G appears in the chief hieroglyph, *r*, of the bat god on the vessel from Chamá,[a] published by Mr Dieseldorff, and that another hieroglyph of this vessel, *s*, is perhaps directly analogous to our hieroglyph G.

The hieroglyphs as a whole appear to me to express an ancient earth goddess who received in her lap the sun and the light and everything living.

We will now pass to the vessel *t*, figure 27. The figure which, with the hieroglyph tablet, is repeated on this vessel three times is that of a man. This is shown by the breechcloth, with ends hanging far down, but which is here accompanied by a short cloth about the hips made of thin veiling or netlike woven material. The body is painted yellow. The position of the arms and hands corresponds to that of the female figures in the vessel just discussed, and probably has the same meaning. Two appendages hang out from the gigantic headdress formed of loops and bands, and these have apparently at their ends two jaguar ears. The reading of the hieroglyphs begins at the right with G. It is evident that the hieroglyphs G, E, C and, in a similar way, F, D, B seem to be related, while A is apparently identical with the two heads of birds on the vertical hieroglyph tablet of the lower principal part of the vessel. Thus we have here a case similar to that presented in the curious varnished vessel of Jaina, near Campeche,[b] described by

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[a] Zeitschrift für Ethnologie, 1894, v. 26, pl. XIII.

[b] Verhandlungen des Vereins für Naturwissenschaftliche Unterhaltung, Hamburg, 1881, v. 5.

Mr Strebel—that is, primarily an ornamental adaptation of one or more hieroglyphs, which are repeated with variations. Mr Strebel is of opinion that each of these variants has its own special meaning, and it may indeed have been so in that particular case, for the symbols near the ear pegs partly recall the different signs on the so-called celestial shields, but in regard to our *t*, I incline to the opinion that we have here mere variants, and I consider the hieroglyphs G, E, C as the chief hieroglyphs of the person represented below, and F, D, B and the bird heads as companion hieroglyphs.

The same case of the employment of ornamental hieroglyphs is also undoubtedly seen on the remarkable third vessel from Rio Hondo, whose decoration is reproduced in *a*, figure 28. This vessel, as I have already stated above, in all probability is to be considered as an artistic production of the Nahua tribe of the Pipils, which doubtless had been settled for a long time in these regions. We must not seek the prototypes of the figures represented on it in Maya manuscripts or in Maya sculptures, but in Mexican picture writings, or in those of the Mixtecs or Zapotecs, which are akin to them in style. Similarity of style between our vessel and the last named appears clearly, both in the position and in the dress of the figures. The figures are clothed with a sort of shirt, the xicolli, which is worn by the rain god Tlaloc, and also by the priests, in Mexican picture writings, and which is especially frequent on the figures in the Mixtec picture writings as the Colombino codex (Dorenberg codex), Becker codex, and the Vienna codex. Besides this shirt, the figures seem to wear a short loin cloth, which is also quite commonly drawn on the figures of the Colombino codex (Dorenberg codex). On the front of this, in our figures, there is a mask. This is a peculiarity of dress which I have not yet met with in purely Mexican documents, but have in those from the more southerly regions of the Mixtecs and the Zapotecs. In the collection of Doctor Sologuren, in Oaxaca, I saw two pottery figures which came from La Ciénaga, in the department of Zimatlan, which plainly show this peculiarity of dress. On a sheet of the Aubin-Goupil collection, a piece of leather painted in gay colors, evidently also of Mixtec origin, the five male deities all wear a mask in front on the girdle. This page is reproduced in page 20 of the Goupil-Boban Atlas with the legend "Le culte rendu à Tonatiuh".[a]

Further, the large headdress is conspicuous on the figures in our picture. It consists, as usual, of a crown of stiff feathers, from which rise long, slender, flexible feathers. On the forehead is seen an open jaw with prominent teeth, and at the back of the head a disk and a bandlike piece with crosshatching. These three elements, and the black stripes connected with them, seem to me like the rudiments of a head decoration which occurs with great regularity in the pictures of the sun god and its allied forms in Mexican picture writings, especially in the Borgian codex, the Laud codex, etc. This head ornament consists of a leather strap ornamented with disks of turquoise, or chalchiuitl, and has on the front part a kind of bird's head with open jaws and prominent teeth. In *b*, figure 28, I reproduce the head of the sun god according to the Laud codex, and I have marked the leather strap (painted red in the original) with its bands at the back of the head with crosshatching. I remark further that not only is this decoration peculiar to the sun god and his allied forms, but that other deities wear a different symbol in the same place. I have pictured in *c* and *d* two other deities from the related Fejérváry codex. The first, a dark, aged, bearded god, perhaps the moon god, wears on his forehead a sea-snail shell. The other, *d*, the god Quetzalcoatl, vulgarly called the "wind god", wears on his forehead the hieroglyph "turquoise".

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[a] In fact, the page forms one of the frequent representations of the tonalamatl, divided according to the five points, the center, or the direction up and down, and the four points of the compass. To each division were assigned a male and a female deity and their different attributes. The 2 × 5, that is, 10, dates in the circle doubtless refer to these deities. Their names are Ce Mazatl, Ce Quiauitl, Ce Ozomatli, Ce Calli, Ce Quauhtli, and Macuil Cuetzpalin, Macuil Cozcaquauhtli, Macuil Tochtli, Macuil Xochitl, and Macuil Malinalli. They correspond to the directions in the order E., N., up, down, W., and S.

It may be added that this is the page which Alfred Chavero copied in the first volume of the work Mexico a traves de los siglos under the name, "Parte superior de la piedra policroma del sacrificio gladiatorio" (!)

Under the upper disk, fastened to the head strap, there is still a second disk visible on the figures in our picture, which is, of course, the ear peg. I should prefer to explain the curved strip which is seen under the lower edge as a lock of hair, in connection with what is seen in *b* to *d*. Still it might be a ribbon or an ornament pendent from the ear peg. Ends of locks of hair are also seen in the first of the two figures, *a*, under the head strap above the forehead. The peculiarly bordered and peculiarly painted portion at the back of the cheek probably indicates a special manner of painting the face. In the pictures of the pulque gods, and also in those of Quetzalcoatl, and of the moon god and others, the back part of the face is painted in a color different from that of the front part.

Like the majority of the Mexican mythologic characters, the figures in our picture wear a feather decoration on the back—their device. This consists of a basketlike frame, something like that with which the god Xolotl is represented in the calendars of the Codices Telleriano-Remensis and Vaticanus A, from which rise immense feathers, while a mask is placed behind this, and one on the girdle in front.

If we further examine the hieroglyphs, it is at once evident that in the upper row three of the hieroglyphs, F, D, and B, figure 28, are only recapitulations of the heads of the personages represented below. The face is the same. The back part of the cheek is also specially defined in the hieroglyphs, and marked by special coloring. Behind this is the ear peg with its appendage. Above that rises the bandlike piece with the crosshatched ornamentation—the loop of the head strap, I suppose—the upper (head strap) part, of course, incomplete. Over the forehead we have again the two locks of hair as in the first of the persons represented below in full figure. The only element which might appear doubtful is that which projects from the forehead in the three hieroglyphs. But even that is in no way doubtful to me. The wide-open jaws, bristling with prominent teeth, which the full figures wear over the forehead, fastened to the strap, are replaced in the hieroglyphs by a row of teeth, such, for example, as are frequently indicated on the stone, or sacrificial, knives, to designate their sharp edge.

While in this way the hieroglyphs F, D, and B are perfectly clear in all their details, I unfortunately can not say the same of the three others, E, C, and A. I do not know their meaning; but the study of them reveals that they are probably mere variants of the same accompanying hieroglyph.

If we finally turn to the hieroglyphs drawn on the two vertical tablets, we again see that there are but two hieroglyphs, with three variants of each. If I designate the hieroglyphs of the left tablet, passing from the upper one to the lowest, as G, H, I, and those of the right one, as K, L, M, then G, K, L are one hieroglyph, and apparently the chief one, and H, I, M, the other, the companion hieroglyph. Since both are forms with which I have not met elsewhere I can only venture to advance a conjecture as to their meaning.

The hieroglyphs H, I, and M show, as the most characteristic and essential element, a double zigzag line passing obliquely across the rest of the hierogylph, in addition to the crosshatched space at the side, outlined by a double curved line. I can not help thinking that this double line, zigzag or wavy, is the same essential element which appears in the hierogylphs A and C, otherwise a puzzle to me, and on this account I am led to suppose that H, I, M is only the companion hieroglyph, E, C, A, become alcul-shaped and abbreviated into one character. If this be the case, one might be led to suppose that G, K, L is the principal hieroglyph abbreviated into one character and changed to alcul-shaped. Indeed, it seems to me as though some essential element of the latter were contained in the alcul-shaped character G, K, L—the eye, the locks of hair over the forehead, and perhaps the cross-hatched piece at the back of the head. With these the analogy appears to stop. But there is still another element of the chief hieroglyph contained in G, K, L, and perhaps precisely the one which seemed most essential to the artist; I mean the row of teeth on the forehead.

In the comparative examination of the separate elements which are employed in the Maya hieroglyphs, I have previously noticed[a] that certain signs, which I was obliged to explain as expressing an open jaw containing formidable teeth, appear as substitutes for and have the same value as others which I am forced to explain as signs for "stone knives". The former, which I copy, *d* to *i*, figure 29, Doctor Brinton reproduced in his latest treatise on Maya hieroglyphs under the name of "crescentic signs". This designation is, to my mind, somewhat misleading. He considers these signs, especially *e*, which is quite frequently placed on the neck, that is, at the mouth of jars and vessels, as neckbands. I observe in this connection that *f* appears in relief tablets from Palenque in the form of *b*, and that the sign Ahau, which usually has the form of *c*, appears in the same tablets from Palenque in the form of *a*, that is, what in *c* is a simple mouth opening in *a* has the form of the element that Brinton explains as a neckband. I need not dwell longer on this, and merely observe that I can cite a dozen hieroglyphs where the element *d* to *i*, which, as is shown by comparing these with figures *d* and *b*, is, in fact, a toothed jaw, replaced by the element *k*. If we turn back to figure 28, we may admit, I think, that the element seen below in the hieroglyphs G, K, L, and also in H has a certain relation to *k*, which means a stone knife and is analogous to the elements which mean "jaw", "mouth". Should not, therefore, the essential element in G, K, L, the row of teeth on the forehead of the principal hieroglyph F, D, B, be considered equal to the open jaw bristling with teeth on the forehead of the personages represented in full figure?

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[a] See my treatise on the character of the Aztec and Maya manuscripts in Zeitschrift für Ethnologie, 1888, v. 20, p. 8.

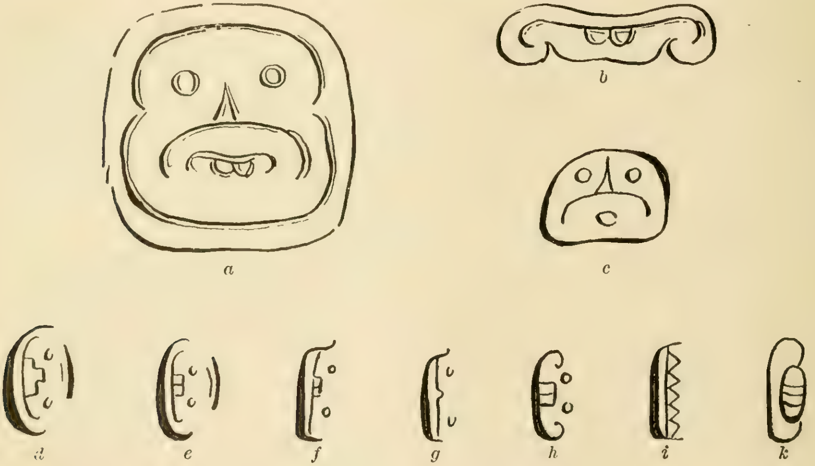

FIG. 29. Adjunct glyphs from Maya codices.

But even if we leave out these doubtful points, it is nevertheless definitely shown by the form and nature of the principal hieroglyph, F, D, B, that we do not see in this third vessel from Rio Hondo—that is, the Pipil vessel—an imitation of Maya decoration and of Maya hieroglyphs. The hieroglyphs F, D, B, perhaps also the others, have grown out of the elements of the person represented on the vessel, and represent rather an earlier stage of alcul-shaped hieroglyphs of the Maya kind than an imitation of them.

In conclusion I would say that I have been able to emphasize only a few definite points in a wide and interesting territory, which, unfortunately, like most of the regions of ancient Mexican and Central American civilizations, is little explored. But I believe the preceding remarks will show that we may hope that more complete archeologic research will further enlighten us in regard to the early history of these ancient peoples, and will make comprehensible the incomplete, uncertain, and contradictory reports of the historian. It is to be hoped that our young countrymen who go to these regions will follow the example of Mr Dieseldorff and Doctor Sapper, and will, above all, bear in mind that the dumb witnesses of a past world, recovered from the earth, should not be buried anew in a drawing room, but that their place is in a public institution, where they can be preserved for posterity, and where, classed with kindred documents, they may be subjected to careful comparison, and in this way be made to speak.

THE MEXICAN PICTURE WRITINGS OF ALEXANDER VON HUMBOLDT

IN THE ROYAL LIBRARY AT BERLIN

BY

EDUARD SELER

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MEXICAN PICTURE WRITINGS OF ALEXANDER VON HUMBOLDT[a]

By Eduard Seler

PREFACE

The sixteen fragments of ancient Mexican picture writing, which are reproduced in colored plates, belong to a "remarkable collection made in the year 1803 in the kingdom of New Spain", which was "presented to the Royal Library by Baron Alexander von Humboldt, in January, 1806". This statement is made by Friedrich Wilken, on pages 155–156 of his History of the Royal Library of Berlin, printed in the year 1828. Wilken mentions "thirteen fragments of historical hieroglyphic writing of the Aztecs upon paper made from the fiber of the Agave americana, together with a codex 14 feet in length belonging to it, in similar hieroglyphic writing". The number does not correspond with the number of pieces now in the library, for, according to his statement, there should be but 14. The reason of this is that two of the original strips were cut in half, lengthwise, and pasted on the same folio page, side by side. These are the pieces shown in plates IX, X, XI, and XII, as I shall describe more in detail in the course of my explanation of these pieces. With the exception of fragment I, which has been preserved in its original form as "the folded codex", all the pieces are pasted upon folio pages and bound together in an atlas. The title page is reproduced in the heliotype atlas. It has been retained, although the historic and archeologic remarks which it contains do not harmonize with our present knowledge of these subjects.

Alexander von Humboldt, who copies and describes fragment II of the collection in his Vues des Cordillères et Monuments des Peuples Indigènes de l'Amérique, plate XII, under the title "Généalogie des Princes d'Azcapozalco", states that he bought the document in Mexico at the public sale of the collections of Gama (the well-known astronomer and author of the work Las dos Piedras, whose full name was Antonio de León y Gama). Humboldt suggests that it may formerly have belonged to the "Museo Indiano" of the Milanese historian and antiquary, Cavaliere Lorenzo Boturini Bernaducci. Since various other of these fragments, as I shall hereafter show, certainly did belong to Boturini's collection, and we know that Gama actually knew of, used, and possessed a great part of Boturini's collection, we may venture to conjecture that the other pieces of the collection brought together by Alexander von Humboldt were acquired in the same way.

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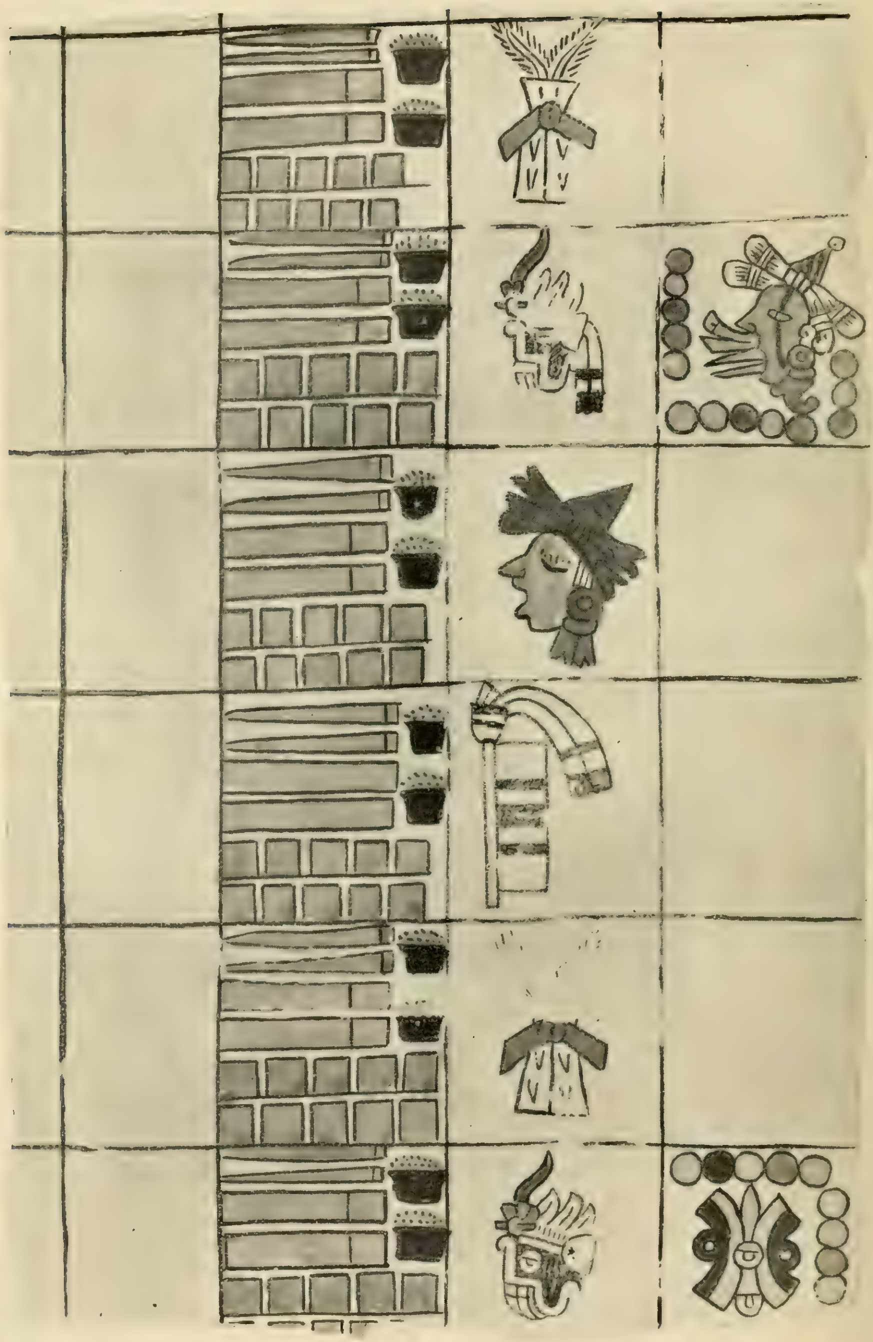
[a] Berlin, 1893.

Fragments II and VI were published and described by von Humboldt in the above-mentioned illustrated work, Vues des Cordillères et Monuments des Peuples Indigènes de l'Amérique. Only a small part of fragment II, however, was reproduced, and that without the explanatory notes which accompany it, and neither of the two fragments was quite perfectly and correctly reproduced. Fragments I and II have also appeared in colors in the second volume of Kingsborough's great work, Mexican Antiquities. Fragment II, however, is without the explanatory notes. Close examination readily shows that neither is by any means accurately nor exactly reproduced, either in drawing or color. The whole collection was exhibited in the year 1888 in the rooms of the Royal Library, with the other manuscripts and printed matter relating to the history and languages of America, during the sessions of the International Americanist Congress at Berlin. The four hundredth anniversary of the day on which Columbus first trod the soil of the New World gave the managers of the Royal Library the desired opportunity to render the entire collection more accessible for general use by multiplying it, photographically at least, as their means did not then admit of reproduction in colors. To me was intrusted the honorable task of accompanying those pages with a few words of explanation, for which I herewith express my thanks to the administration of the Royal Library.

FRAGMENT I

This fragment (plates II to VI) is a strip of agave paper 4.3 m. long and somewhat more than 8 cm. wide, painted on one side and then folded fourteen times, thus making a book about a foot in length. The painted side is divided lengthwise by vertical lines into 5 strips, and by other lines cutting the former at right angles into 75 sections. I will designate the longitudinal strips from right to left by the letters A, B, C, D, and E (plates II to VI), and the subdivisions beginning at the bottom—for there the reading begins—by the figures 1 to 75. The lower end is imperfect. It is obvious that there was still another section below, which was painted in similar fashion and possibly formed the end of an entire missing row. The upper end looks as if it had been sharply cut off. As the entries of material objects



MEXICAN PAINTING—HUMBOLDT FRAGMENT I, PART 1

(columns C to E) cease in the fifth section from the top, it may be assumed that this was the end of the strip, and that it was not further written upon because, for some reason, the entries ceased altogether.

In column B four pictures follow one another in regular repetition. These I will designate by a, b, c, and d, proceeding from below upward. Thus we have a in sections 1, 5, 9, 13, etc., b in sections 2, 6, 10, 14, etc., c in 3, 7, 11, 15, etc., d in 4, 8, 12, 16, etc.

The picture a, plate II, shows a dark-colored face with a large round eye, a row of long tusks, and over the lips an angular blue stripe curved downward and rolled up at the ends. This is the familiar face of the rain, thunder, and mountain god of the Mexicans—Tlaloc by name—a face the features of which were supposed to be produced originally by the coils of two snakes, their mouths, with long fangs in the upper jaw, meeting in the middle of the upper lip.[a] The face of the rain god here stands for his chief festival, the sixth (according to the usual reckoning) of the eighteen annual festivals of the Mexicans, known as Etzalqualiztli, that is, " when they eat bean food " (beans cooked with whole kernels of maize).[b]

The second of the four pictures (b, column B) is a white strip painted over with black acute-angled figures, wound about with a red band, from which two yellow tufts protrude at the top. The white strip painted with angular figures represents a so-called teteuitl, or ama-teteuitl, a strip of white bark paper (the inner bark of a variety of fig) upon which certain figures are drawn with liquid caoutchouc. These teteuitl were in general use as sacrificial gifts. At the feast of the rain gods they were hung upon long poles in the courtyard of the house;[c] they were fastened on the breast of the small idols of the mountain gods,[d] and were burned in honor of the fire gods.[e]

These were easily prepared images of the gods to which they were offered. The picture of the god, or his symbol, was drawn on the paper with caoutchouc.[f] The red band which is wound around the paper is a leather strap of the kind that were much used, either colored or gilded, as ribbons and for ornamental purposes.[g] And, finally, the yellow tufts which protrude at the top represent a broom. These brooms were made of a hard, stiff, pointed grass, which was cut with sickles in the mountainous forests of Popocatepetl and Ajusco.[h] The whole picture is a symbol of the old earth goddess called Toci, " our progenitrix", or Teteo innan, "mother of the gods", and of the eleventh (according to the usual reckoning) of the eighteen annual festivals of the Mexicans, Ochpaniztli, the "broom feast" or "house-cleaning festival", celebrated in honor of this goddess. For the broom, which symbolizes one of the first domestic, that is, feminine, occupations, was a special symbol of this goddess, who was therefore also the goddess of purity, of purification and eradication of sin.[a] The teteuitl paper with which the broom is bound together is in our

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[a] See Seler, Das Tonalamatl der Aubinschen Sammlung, in Comptes Rendus du Septième Session du Congrès International des Américanistes, Berlin, 1888, p. 584.

[b] See Durán, v. 3, sec. 6; Sahagun, v. 2, chap. 6.

[c] Sahagun, v. 2, chaps. 20 and 35.

[d] Sahagun, v. 2, chap. 32.

[e] Sahagun, v. 9, chap. 3; v. 2, chap. 34.

[f] See Sahagun, v. 9, chap. 3.

[g] See the hieroglyph of Cuetlaxtlan, " The Land of Leather ", in the Mendoza codex, v. 8, p. 21; v. 51, p. 1.

[h] See Sahagun, v. 10, p. 24; v. 8, p. 61 (Bustamante edition), and a comment on the passage by the editor.

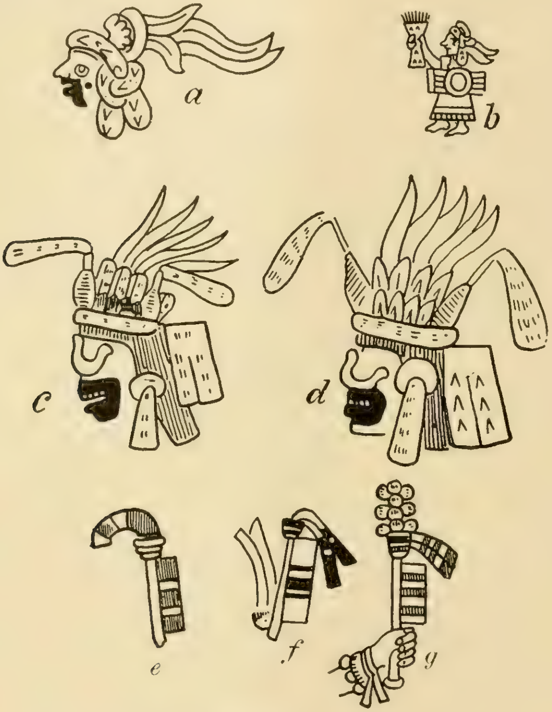

FIG. 30. Headdresses and flags from Mexican codices.

picture b painted with figures which again denote an attribute of the same goddess. The Mexicans in their paintings represented the raw, unspun cotton by acute-angled figures or groups of parallel lines on a white ground. Cotton, as a material for woman's work, was for that reason one of the chief attributes of the above-mentioned deity. Her headband (see *a*, figure 30) called i-ichcaxochiuh, "her headband of cotton", was made of that material.[b] A strip of unspun cotton hung from her ear peg and loose cotton was bound to the end of the spindle which she wore between the hair and the headband (*c* and *d*, figure 30).

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[a] Seler, Das Tonalamatl der Aubinschen Sammlung, volume cited, p. 651.

[b] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, p. 148.

In *c* and *d*, figure 30, we also see a paper covered with drawings of cotton fastened to the back of the goddess's head. That the paper in our picture b, painted with the acute-angled figures, is, like the broom, a symbol of the earth goddess is most clearly shown by the fact that the broom which, in her picture, the goddess Toci carries in her hand is wound round with paper similarly painted. Thus we see it in *b*, figure 30, which is taken from the picture in the Sahagun manuscript of the Bibliotheca del Palacio at Madrid, which represents the various ceremonies of the feast Ochpaniztli.

The third picture in the column, which I designate by c (plate II), represents a flag apparently made of striped woven stuff, with streamers of the same material fastened to its top. Such flags were, it seems, called quachpamitl—derived from quachtli, " a square piece of woven cloth ", and pamitl, " flag ". Among the Mexicans, as among the nations of the Old World, flags and other insignia played an important part in war. The Mexicans, however, as a rule, did not carry these insignia free in their hands, but strapped upon their backs, though it seems that flags of the same sort and shape as the one represented in our picture c were also waved in the hand. The signal for battle was given with them, as we learn from Sahagun. Thus we read in the Aztec manuscript of the Academia de la Historia at Madrid: " Yn quachpanitl, coztic teocuitlapanitl yoan quetzalpanitl, yn teeuitia yyaoc: yn omottac yê meuatiquetzaya izqui quachpanitl, niman cemeua yaoquizque ynic miccali ". Sahagun (book 8, chapter 12) translates it somewhat inexactly: Tambien usaban de unas vanderillas de oro, las cuales en tocando al arma las levantaban en las manos, porque comenzasen à pelear los soldados (" They also used certain golden flags, which, when the call to arms was sounded, they raised in their hands, because the soldiers began to fight "). The correct translation is as follows: " The flag of woven stuff, the flag of plates of gold, and the one made of quetzal feathers, they call the people in war time to prepare for battle. When men see how the quachpamitl (flags of woven stuff) are raised on every hand, then the warriors go forth to battle ". The raising of the flag, then, was the signal to begin battle. Panquetzaliztli, the raising of the flag, therefore, was the name of the festival—the fifteenth, according to the usual reckoning—which the Mexicans celebrated in honor of the god Uitzilopochtli, who was especially regarded as the god of combat and war. In Codices Telleriano-Remensis and Vaticanus A this festival is represented by the figure of the god himself holding a flag in his hand (*g*, figure 30), which shows essentially the same characteristics as the one in the picture c, plate II. Elsewhere the quachpamitl is painted by itself, as in later calendars, from which I reproduce the figure with the legend in *e* and *f*, figure 30, and also in our picture c, plate II, which illustrates the fifteenth annual festival, the feast Panquetzaliztli.

Finally, the fourth picture, which I designated by d, plate II, shows us the head of a well-known deity, the red god Xipe, whose original home was near Yopi, in the deep ravines of the Pacific slope, but whose worship was widely spread throughout the highlands, and particularly in the capital, where it was celebrated with special pomp. It is a peculiar characteristic of this god that he goes about clad in a flayed human skin. Therefore, at his feast victims were not only slaughtered in the usual manner by tearing out the heart, which was offered up to him, but afterward the corpse was flayed and its skin put on by such persons as, for any reason, wished to show the god special devotion. It was worn by them continually during the twenty days following the festival. This feast, called Tlacaxipeualiztli, "man flaying"—the second, according to the usual reckoning—is represented in our picture d by the head of the god Xipe.

Thus we have in a, b, c, and d of column B, plates II and III, the pictures of four yearly festivals, namely, the sixth, eleventh, fifteenth, and second, according to the usual reckoning. The sixth feast was separated from the eleventh by 5×20, or 100, days: the eleventh from the fifteenth by 4×20, or 80, days; the fifteenth from the second by 5×20+5, or 105, days (in this interval fall the nemontemi, the five superfluous days, which were counted at the end of Izcalli), and, lastly, the second was 4×20, or 80, days, distant from the sixth, giving a total of 100+80+105+80, or 365. These four festivals, it is true, do not divide the year into four quarters, except approximately. It is as exact and regular as is possible in a year composed of eighteen parts of 20 days each and 5 superfluous days.

We will now consider column A (see plates II and III), the first on the right hand of the strip. Here we invariably find, together with the feast Etzalqualiztli (a of column B), a picture and several small circles, which express a certain number. Here, again, we have four pictures, which follow one another from below upward in regular alternation. I will designate these, beginning at the bottom, by α, β, γ, and δ.

The first character, α, is composed of an eye, a vertical ray, and two lateral parts, probably derived from the drawing of a cross, the arms of which cut each other at a somewhat acute angle. This is the symbol of the four cardinal points (see the variant of this character, *e*, figure 31, from the Sahagun manuscript of the Biblioteca Laurenziana), but may, perhaps, have some connection with the drawing often found on spindle whorls (see *a*, *b*, *c*, and *d*, same figure) of two eyebrows surrounding the hole of the spindle, supposed to be the eye. Compare *k* and *l*, figure 31, taken from a list of persons in the towns of Uexotzinco and Xaltepetlapan (Mexican manuscript No 3 of the Bibliothèque Nationale in Paris) and denoting persons of the name of Olin. The whole character stands for the word olin, "that which rolls". It is the seventeenth of the twenty day signs of the Mexicans, and was regarded as standing in special relation to the sun. The form which the character takes in our picture *α*, plate II, most resembles that which we see in Codices Telleriano-Remensis and Vaticanus A (see *f*, figure 31), and it is not wholly without significance in deciding the question of the origin of the picture writing under consideration.

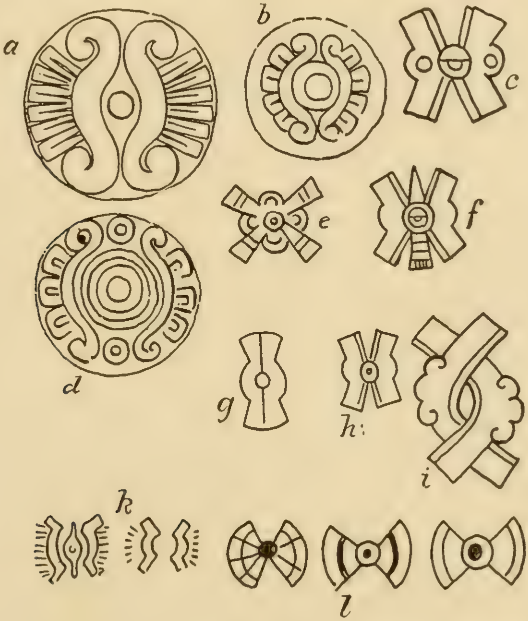

FIG. 31. Variations of the Mexican seventeenth day symbol.

The second sign of column A, which I call *β* (plate II), represents the head of the wind god, Ehecatl, or Quetzalcoatl. He has a protruding, trumpetlike mouth, for the wind god blows (see also *c*, *d*, and *e*, figure 41). Generally speaking, this figure suggested whirls and circles. Hence his temples were built in circular form. The cap which he wears is cone-shaped. The ends of his headband and his breechclout are rounded. His head ornament is the spiral snail shell. He wears snail shells as a necklace, and his breast ornament, the ecailacatzcozcatl,[a] as well as his ear ornament, is carved from a huge whelk shell. The head of the wind god here stands for the second of the twenty day signs of the Mexicans, which was called Ehecatl, "wind". The form which the character has in our figure likewise resembles most the form which is drawn in Codices Telleriano-Remensis and Vaticanus A.

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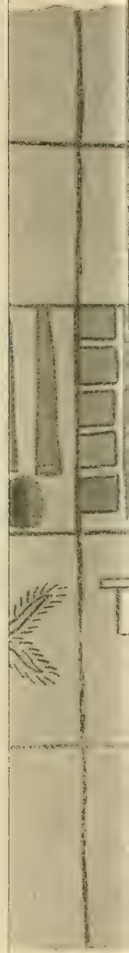
[a] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde zu Berlin, v. 1, pp. 128, 129.

The third sign (γ, plate III) in column A shows us the head of a deer, which is most unnaturally drawn, having upper incisors, but is plainly intended to represent a deer, as is shown by the branching antlers. The seventh of the twenty day signs of the Mexicans was designated by the picture of the deer (Mazatl).

The fourth sign, δ, is a death's-head, with fleshless jaw, a great, round eye with an eyebrow, and a protruding tongue, such a head as was customarily used among the Mexicans to represent death or the death god. But here the skull is covered with a green bush, the separate stalks of which end in small yellow knobs. This green bush represents grass, and is illustrative of the rope twisted of grass (malinalli), which has been used from remote antiquity down to the present day for cording heavy burdens, such as charcoal, etc. The whole denotes the twelfth of the twenty day signs of the Mexicans, called malinalli, "that which is twisted". The green bush is combined with the death's-head in this picture, because the rope twisted of grass suggested the mummy bales corded with rope, like a burden which has the form given to the bodies of the dead. Perhaps, too, the grass itself, shooting up anew with the first showers of rain and then withering quickly, awakened the thought of the transitoriness of earthly things. At any rate, it is a fact that malinalli was considered a sign of misfortune; that decay, destruction, and change were supposed to follow swiftly in its train. We may also note in regard to the form of the sign that our picture δ most closely resembles the forms in which this sign of ill omen, malinalli, is represented in Codices Telleriano-Remensis and Vaticanus A.

The Mexican numerical system was vigesimal. Therefore the number 20 naturally formed the basis of computation of time. The people designated each one of the 20 consecutive days by a particular sign. But with these twenty signs they combine the numerals 1 to 13 in such a way that each of the consecutive days was designated by a sign and a numeral. If, therefore, the numeral 1, combined with the first sign, served to designate the first day, then the fourteenth day took the fourteenth sign, and also the numeral 1 again. Thus a period of 13×20, or 260, days was reached as a higher chronologic unit. For no day received the same numeral and the same sign until after the expiration of this period. The period of 13×20, or 260, days was called tonalamatl, "the book of the day signs".



NTING—HUM

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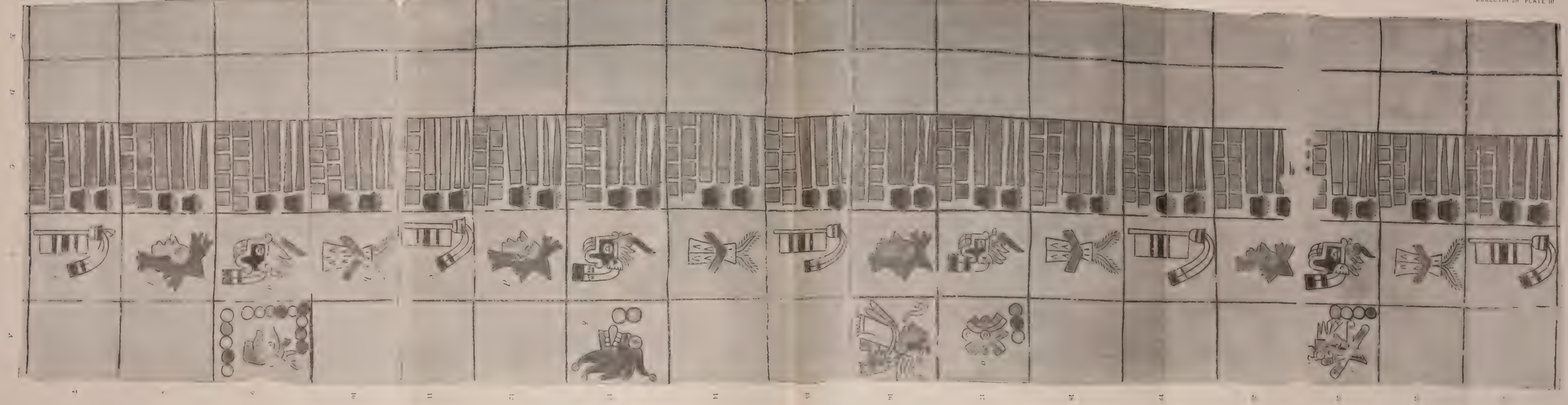
DT FRAGM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MEXICAN PAINTING—HUMBOLDT FRAGMENT I, PART 2

The Mexicans reckoned 365 days to the year, and I have already stated that they divided the year into eighteen periods of 20 days each and 5 superfluous days, called nemontemi. These 5 superfluous days were regarded as unlucky days, as useless, fit for no serious business. Hence the ancient Mexicans said of them " acām pouhqui ". This undoubtedly means " they were held in no esteem ", but according to the original meaning of the words they may also signify " they were not counted ". It has therefore been inferred that these 5 days were left blank; that the continuous series of signs and numerals was not applied to them. In an article which I presented to the Anthropologic Society at Berlin in the year 1891,[a] I pointed out that the whole Mexican system of designating the year—namely, that the consecutive days were designated by four signs, each two of which were 4 days apart—and the Mexican periods of 52 years were intelligible only if we assume that the 5 nemontemi, the superfluous days, were named and numbered in the same way as the others. Our manuscript, plate I of the present series, affords the best proof of this theory.

In column B the pictures follow in regular alternation, and approximately denote the beginning of every quarter of a year for a consecutive series of years. Besides the first of these, the symbol of the feast Etzalqualiztli, there are in column A numerals and signs which, taken together, denote each the date of a certain day. In the lowest of them, in square 1A (plate II), the small circles, which represent the numerals, are imperfectly preserved. But from what remains, and from the connection of the whole series, it may be inferred that the numeral 12 should stand here. If we introduce this numeral we see that in column A (side by side with the Etzalqualiztli of column B, plates II to VI) the following dates of days are given:

Olin	Ehecatl	Mazatl	Malinalli
12	13	14	2
3	4	5	6
7	8	9	10
11	12	13	14
2	3	4	--

Here the numeral 14,[b] which does not really belong to the designation of the days, is invariably to be read as " 1 ", for only the numerals 1 to 13, as I have stated, are used in addition to the twenty characters to designate the consecutive days.

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[a] Zeitschrift für Ethnologie, v. 13, pp. 89–133.

[b] The 14 in the manuscript is an error of the native artist. C. T.

TABLE III.

	Etzalqualiztli	Tecuilhuitonli	Uei tecuilhuitl	Tlaxochimaco	Xocouetzi	Ochpaniztli	Teotleco	Tepeilhuit	Quecholli	Panquetzaliztli	Atemoztli	Tititl	Izcalli	Nemontemi		Atlcaualco	Tlacaxipeualiztli	Tozoztontli	Uei tocoztli	Toxcatl	Etzalqualiztli
Olein	12	6	13	7	1	8	2	9	3	10	4	11	5			12	6	13	7	1	8
Tecpatl	13	7	1	8	2	9	3	10	4	11	5	12		6		13	7	1	8	2	9
Quiauitl	1	8	2	9	3	10	4	11	5	12	6	13		7		1	8	2	9	3	10
Xochitl	2	9	3	10	4	11	5	12	6	13	7	1		8		2	9	3	10	4	11
Cipactli	3	10	4	11	5	12	6	13	7	1	8	2		9		3	10	4	11	5	12
Ehecatl	4	11	5	12	6	13	7	1	8	2	9	3		10		4	11	5	12	6	13
Calli	5	12	6	13	7	1	8	2	9	3	10	4			11	5	12	6	13	7	
Cuetzpalin	6	13	7	1	8	2	9	3	10	4	11	5			12	6	13	7	1	8	
Coatl	7	1	8	2	9	3	10	4	11	5	12	6			13	7	1	8	2	9	
Miquiztli	8	2	9	3	10	4	11	5	12	6	13	7			1	8	2	9	3	10	
Mazatli	9	3	10	4	11	5	12	6	13	7	1	8			2	9	3	10	4	11	
Tochtli	10	4	11	5	12	6	13	7	1	8	2	9			3	10	4	11	5	12	
Atl	11	5	12	6	13	7	1	8	2	9	3	10			4	11	5	12	6	13	
Itzcuintli	12	6	13	7	1	8	2	9	3	10	4	11			5	12	6	13	7	1	
Ozomatli	13	7	1	8	2	9	3	10	4	11	5	12			6	13	7	1	8	2	
Malinalli	1	8	2	9	3	10	4	11	5	12	6	13			7	1	8	2	9	3	
Acatl	2	9	3	10	4	11	5	12	6	13	7	1			8	2	9	3	10	4	
Ocelotl	3	10	4	11	5	12	6	13	7	1	8	2			9	3	10	4	11	5	
Quauhtli	4	11	5	12	6	13	7	1	8	2	9	3			10	4	11	5	12	6	
Cozcaquauhtli	5	12	6	13	7	1	8	2	9	3	10	4			11	5	12	6	13	7	

If, after making this correction, we consult a table of the Mexican calendar, we see, assuming that the 5 nemontemi were named and numbered continuously in the same way as the other days, that the dates of the days given in column A are always exactly 365 days apart.

This, I think, clearly proves, first, that the pictures drawn in column B are actually the beginnings of quarters of years, and the different pictures A are meant to show the annual recurrence of the feast Etzalqualiztli; second, that the statement that the 5 nemontemi were not counted can rest only on a misunderstanding.

But our manuscript is of importance to chronology in yet another respect. It is well known that the Mexicans called their years by the four day signs Acatl, "reed"; Tecpatl, "flint"; Calli, "house", and Tochtli, "rabbit", which they combined with the numerals 1 to 13 in the same way as in naming the days.

TABLE IV.

1 Acatl	1 Tecpatl	1 Calli	1 Tochtli	1 Acatl
2 Tecpatl	2 Calli	2 Tochtli	2 Acatl	and so on
3 Calli	3 Tochtli	3 Acatl	3 Tecpatl	as before.
4 Tochtli	4 Acatl	4 Tecpatl	4 Calli	
5 Acatl	5 Tecpatl	5 Calli	5 Tochtli	
6 Tecpatl	6 Calli	6 Tochtli	6 Acatl	
7 Calli	7 Tochtli	7 Acatl	7 Tecpatl	
8 Tochtli	8 Acatl	8 Tecpatl	8 Calli	
9 Acatl	9 Tecpatl	9 Calli	9 Tochtli	
10 Tecpatl	10 Calli	10 Tochtli	10 Acatl	
11 Calli	11 Tochtli	11 Acatl	11 Tecpatl	
12 Tochtli	12 Acatl	12 Tecpatl	12 Calli	
13 Acatl	13 Tecpatl	13 Calli	13 Tochtli	

In my treatise, already mentioned above,[a] I laid stress on the fact that the origin of this nomenclature lies in the acceptance of a year of 365 days, and that the years were simply named after a certain leading day. In fact, if we assume, for instance, that in one year the leading day was the second one in table III, page 136, bearing the sign Tecpatl and the numeral 13, then in the next year, that is, after the lapse of 365 days, the same day would take the sign Calli and the numeral 1, and so on. Now, at the outset it is most natural to suppose that this leading day, from which the year was first named, was the first day of the year, and that the first days of the consecutive years bore the signs Acatl, Tecpatl, Calli, and Tochtli. It can not well be denied, as I demonstrated in the above-mentioned article,[b] that at the time and place it first occurred to scholars that only four of the twenty day signs fell upon the first days of the years, it was those very days Acatl, Tecpatl, Calli, and Tochtli with which the years then and in that place began, or at least that these days were then and in that place, for whatsoever reason, chosen as the first days of the years. To be sure, the admission of this contradicts the assertions of Durán and those of Cristóbal del Castillo, quoted and used by León y Gama, as these make the Mexican year begin with Cipactli, that is, with Cipactli, Miquiztli, Ozomatli, and Cozcaquauhtli, respectively. But I saw an indirect proof of my theory in the circumstance that ancient records from two remote and widely separated places, Meztitlan on the borders of Huaxteca and Nicaragua, made the series of twenty day signs begin with Acatl; and I furnished a direct proof by showing that in the Mayan manuscript at Dresden the years do not indeed begin with Kan, Muluc, Ix, and Cauac, with which, according to Landa and the books of Chilam Balam, the Mayas began their years in later times, but with Been, Ezanab, Akbal, and Lamat, the characters which correspond to the Mexican Acatl, Tecpatl, Calli, and Tochtli.

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[a] Zeitschrift für Ethnologie, 1891, v. 22.
[b] Zeitschrift für Ethnologie, v. 23, p. 102.

It is true our manuscript (plate I) does not mention the first days of the years, but in column A it gives the days on which the sixth feast of the year, Etzalqualiztli, fell.

We know that in the so-called months, or periods of 20 days, which were named for the various yearly festivals, the actual feast of the respective name always fell on the last day of the period. If, therefore, as our column A shows, in the 19 years presented here the feast Etzalqualiztli, the sixth festival of the year, fell on the days

Olein	Ehecatl	Mazatl	Malinalli
12	13	1	2
3	4	5	6
7	8	9	10
11	12	13	1
2	3	4	

then it directly follows that the first day of the seventh period (named for the feast Tecuilhuitontli) must fall on the days

Tecpatl	Calli	Tochtli	Acatl
13	1	2	3
4	5	6	7
8	9	10	11
12	13	1	2
3	4	5	

And if, with Sahagun, we put the beginning of the year on the first day of the period named for the feast Atlcaualco we shall have the following series for the first days of these 19 years:

Tecpatl	Calli	Tochtli	Acatl
10	11	12	13
1	2	3	4
5	6	7	8
9	10	11	12
13	1	2	

From our manuscript, which, so far as I know, is the only Mexican manuscript that contains a long series of years, or, more exactly speaking, dates of days extending over a long series of years, it therefore follows positively that the Mexicans began their years with the characters Acatl, Tecpatl, Calli, and Tochtli, just as the Maya priests who wrote the Dresden manuscript began their years with the days corresponding to the same four characters.

This result, which I reached on grounds of a more general nature, and which, as we see, is directly obtainable from our manuscript, has been still further confirmed by evidence very recently published. At the last session of the Americanist congress which met at Huelva Mrs. Zelia Nuttall exhibited upon a large chart a recon-

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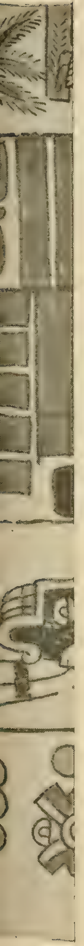

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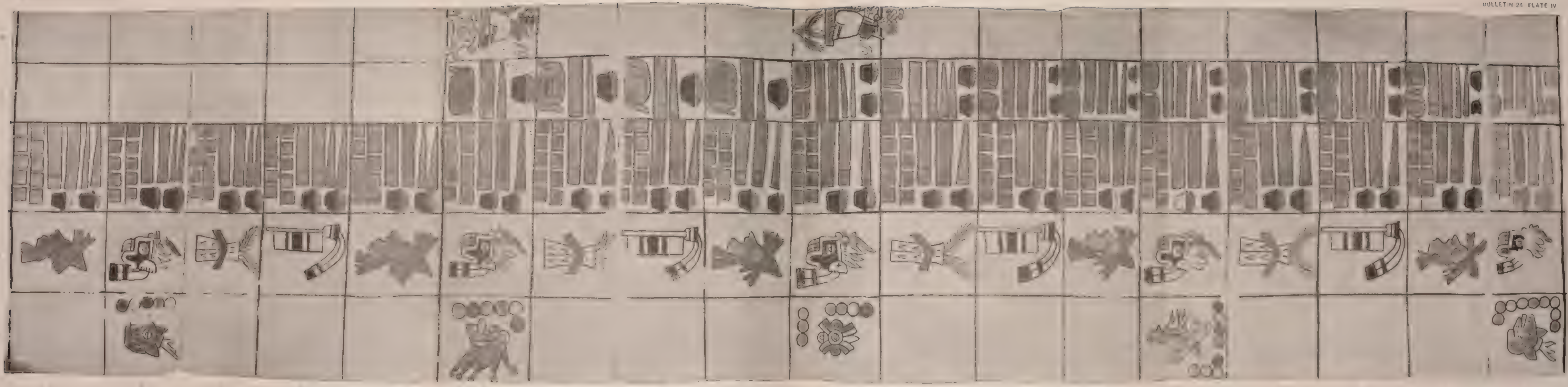

MEXICAN PAINTING—HUMBOLDT FRAGMENT I PART 3

struction devised by her of the Mexican calendar, further particulars concerning which she has reserved. Upon this chart was the following passage from an important Mexican picture manuscript, which belongs to the Biblioteca Nazionale at Florence, and which will soon be published in facsimile by Mrs Nuttall: Es de notar que siempre comiença el año en un dia de quatro. el uno que llaman acatl. Y de alli toman nonbre. O en otro que llaman calli. Y de alli toman nonbre. O en otro que llaman tecpatl. Y de alli toman nonbre. Y de otro que llaman tochtli. Y de alli toman nonbre ("It is to be noted that the year always begins on one of four days—the one which they call Acatl, and from there they take the name; or on another which they call Calli, and from there they take the name; or on another which they call Tecpatl, and from there they take the name; and from another which they call Tochtli, and from there they take the name"). This is clear and intelligible, and Mrs Nuttall has correctly made this passage the starting point for her researches.

It is quite another question, and one which I must touch upon here, whether the month Atlcaualco, stated by Sahagun and others to be the first month of the year, is really the one which was the leading, or first, month at the time when the designation of the years, according to the four days Acatl, Tecpatl, Calli, and Tochtli, first came into use. This question, it seems, should be answered in the negative.

The most important statement by the old writers which makes an agreement between the Mexican and our chronology and a comparison of the Mexican designations of the years with certain days of any one year possible is that made in Sahagun, book 12, chapter 40, where it is stated that the capture of Quauhtemoctzin, which put an end to the desperate defense of the city of Mexico, occurred on the day ce Coatl, "1 snake", of the year yei Calli, "3 house": Auhin omoman chimalli inic tixitinque in xiuhtonalli ei calli, auh in cemilhuitlapoalli ce Coatl ("When the shield was laid down (the war ceased), while we fell to the ground, that was the year '3 house' and the day '1 snake'"). (Biblioteca Lorenziana manuscript.) This day was, as we know from the letters of Cortes and Gomara's history, Tuesday, St. Hippolytus's day, August 13, 1521.[a] The Aztec writer Chimalpahin says the same thing in his Seventh Relation: Yheuac canque yn tlatohuani Cuauhtemoctzin ypan cemilhuitonalli ce cohuatl * * * ic matlactlomey mani metztli agosto, ypan ylhuitzin S. Tipolito, martyr ("They took King Quauhtemoctzin prisoner on the day '1 snake' * * * on the 13th day of August, the feast of the holy martyr Hippolytus").[b] On the basis of this statement Orozco y Berra, in the second volume of his Historia Antigua y de la Conquista de México, tried to find an agreement between the Mexican and European chronologies; but the attempt failed in the most essential points, since Orozco favored the erroneous view that the Mexicans began their years, and therefore also what they called their months, with the days Cipactli, Miquiztli, Ozomatli, and Cozcaquauhtli.

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[a] Cartas de Hernan Cortés, ed. Gayangos, Paris, 1866, p. 257; Gomara, Crónica, chap. 143.

[b] Anales de Domingo Francisco de San Anton Muñoz Chimalpahin Quauhtlehuanitzin, Seventh Relation, edid. Rémi Siméon, p. 194.

In order to make the matter clear, I will mention still another point of agreement. In the Seventh Relation of Chimalpahin (page 188 of Rémi Siméon's edition) we read that the entrance of Hernan Cortes into Mexico and his reception by the kings of the three allied kingdoms, Mexico, Tetzcoco, and Tlacopan, took place on the day chicuey Ehecatl, "8 wind", the ninth day of the month Quecholli: "ypan cem ilhuitlapohualli chicuey ehcatl, auh yn ipan ynin metztlapohual catca huehuetque chiucnahuilhuitia quecholli". We have also a statement in regard to the same day in the Aztec account which is preserved in the Sahagun manuscript of the Biblioteca Lorenziana. This latter account agrees with the former in stating that the coming of the Spanish occurred in the year ce Acatl, "1 reed", on the 9th of the month Quecholli—or, as the author says, on the eve of the 10th of the month Quecholli—but it differs from it in saying that this day was not designated as a day "8 wind", but as ce Ehecatl, "1 wind", and that would be a day 20 days previous to the other: "auh in izquilhuitico in Mexico in ic calaquico in Españoles: ipan ce hecatl in cemilhuitlapoalli: auh in xiuhtonalli ce acatl, oc muztla tlamatlactiz quecholli: auh in cemilhuitique ome calli: vel iquac in tlamatlactli quecholli". If we consult Spanish historians we find, in Bernal Díaz del Castillo's Historia Verdadera, the day of the Spanish entrance given as November 8 of the year 1519.

The writer of the account in the Sahagun manuscript continues his computation from the date given above by counting each month, to which fact I would call attention here. This was, no doubt, the usual historic chronology, for on page 136 of Codex Vaticanus A we see the months which elapsed during the stay of the Spaniards in the city similarly set down. The writer of the Sahagun account reckons in this way to the feast Toxcatl, when Alvarado fell upon the unarmed Mexicans decked for the feast and slaughtered the flower of the Mexican nobility, and then onward to the feast Tecuilhuitontli, that is, the completion of the month Tecuilhuitontli. On this day, he says, the Spanish fled by night from the city: "Niman quivaltoquilia tecuilhuitontli, ie oncan in quizque, vel ipan in ilhuitl in quizque in Españoles in moioalpoloque". There were altogether, he says, 235 days, that is, 195 days during which the Spaniards and Mexicans were friends and 40 days during which they fought each other. Computed accurately this can not mean the feast Tecuilhuitontli itself, but the eve of the feast. For counting 235 days from the ninth day of the month Quecholli we come to the 19th and not to the 20th, the last day of the month Tecuilhuitontli. The Spaniards probably left the hostile city on the night before the feast, and the narrator counts the whole days which lay between the ninth day of Quecholli and the feast Tecuilhuitontli. It can be computed with tolerable accuracy that this day, the "noche triste" of unhallowed memory to the Spanish, was the 30th of June, 1520.[a] But from November 8, 1519, to June 30, 1520, there are actually 235 days, since 1520 was a leap year. The authenticated European chronology and that of our Indian informant thus agree perfectly.

If we now compare these newly acquired dates with the one first quoted, the day of Quauhtemoc's capture, we have the following computation: Between November 8, 1519, and August 13, 1521, there elapsed 644 days. If we count 644 days from the 9th day of Quecholli in the Indian calendar of feasts, in doing which we should take into account that the Mexicans had no leap years, we come to the third day of the month Xocotluetzi. We must conclude that in the Indian calendar of feasts this was the day of Quauhtemoc's capture.

But now, before I draw further conclusions from this result, I must mention that it contradicts certain other records. According to an account quoted by León y Gama [b] Quauhtemoc's capture did not take place in the month Xocotluetzi, but in Nexochimaco, or Tlaxochimaco, the preceding month. Chimalpahin seems to make a similar statement, for he says, in the passage from which I quoted above: Auh yye ohuacic nauhpohuallonmatlaqu-ilhuitl yn otech icalque tlaxochimaco yye . . . yc tixitinque ("after they had striven against us 90 days, we at last surrendered in Tlaxochimaco (?)").

It is obvious that this can not be reconciled with the statements mentioned above. As, however, those other statements are to a certain extent controlled by European computation, it is very possible that there is an error here, the more so because, by our calculation, the day of Quauhtemoc's capture was comparatively close to the feast Tlaxochimaco, being on the third day following it. The beginning of the battle and the appearance of the Spanish caravels at Nonoucalco, which, according to Chimalpahin's repeated assertion, occurred 90 days before, are placed by Chimalpahin in the month Toxcatl. This coincides with our reckoning. But when he says in the passage in question [c] that it was on the day ce Cozcaquauhtli, "1 king vulture", it is incorrect. It is undoubtedly a slip of the pen or, perhaps, an error in reading. It should rather be ei Cozcaquauhtli,

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[a] The letter of Cortes states that the army reached Tlaxcala on the 8th of July, and from the general's accurate account of their progress each day it appears that they left the capital on the last night of June, or rather the morning of July 1 (Prescott, Hist. Conquest Mexico)

[b] Dos Piedras, 2d ed., p. 79, note, and p. 80.

[c] Page 193 of the Rémi Siméon edition.

"3 king vulture". This latter day occurs 90 days before the day ce Coatl, the day of Quauhtemoc's capture.

Now, if the day of Quauhtemoc's capture was August 13, 1521, the third day of the month Xocotluetzi, it follows, as this was said to have been likewise a day ce Coatl, "1 snake", that the first day of the month must have been the day 12 Calli and the first day of the year 1 Calli. Hence it follows, as I stated above, and as can safely be concluded from the dates in our manuscript, that the years of the Mexicans began with the signs Acatl, Tecpatl, Calli, and Tochtli, and not, as was hitherto generally supposed, with the signs Cipactli, Miquiztli, Ozomatli, and Cozcaquauhtli; and it follows, since the year 1521 is said to have been a year 3 Calli, that the years of the Mexicans were not named for the first day of the first month, Atlcaualco, as has been commonly believed, but, as the computation shows, for the first day of the fifth month, on whose last day the feast Toxcatl was celebrated; lastly, it follows that the beginning of the month Atlcaualco in the year of the conquest did not fall on the 2d of February, as was decided after much discussion at the Indian conference held at Tlatelalco in Sahagun's time,[a] but that it must have fallen on the 12th of February. The latter result is of special importance because it proves that in the forty odd years which elapsed between the year of the conquest and the time when the Sahagun manuscript was composed[b] the beginning of the Mexican year was set forward 10 days. This is exactly the sum of the intercalary days, which occur in this period of time, and proves that the Mexicans did not know how to regulate their chronology by intercalations at short intervals.

If this is firmly established, then we may further conclude that the day of the arrival of the Spaniards, said to have been the ninth day of the month Quecholli, can have been neither 8 Ehecatl (as Chimalpahin states) nor 1 Ehecatl (as the writer of the account in the Sahagun manuscript asserts), but must have been the day before 7 Cipactli or 13 Cipactli. Otherwise, the month must have begun with a day Ocelotl, which, as we have seen, is incorrect. But if from 1 Coatl, the day of Quauhtemoc's capture, we count 644 days backward in the Indian calendar we do not arrive at 1 Cipactli, but at 7 Cipactli. Chimalpahin's statement was, therefore, relatively correct (within 1 day), and the writer of the account in the Sahagun manuscript made an error of 20 days. The only explanation I can give for the fact that both sources agree in mentioning a day Ehecatl instead of a day Cipactli is that tradition confused the day and its eve or that the name of the day was not held fast by tradition, but was only recovered by computation, and that perhaps in doing this they reckoned back not 644, but 643, days, possibly because leap year was not taken into account.

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[a] See Sahagun, v. 7, chap. 12.

[b] In the Sahagun manuscript of the Academia de la Historia the year ome Acatl (= A. D. 1559) is given as the year of writing down at least certain parts (the historical ones) of the manuscript.

If this be denied, and if the assertions of Chimalpahin and the account in the Sahagun manuscript that the ninth day of the month Quecholli was a day Ehecatl—the only statements to my knowledge where there is a distinct agreement between the day of the month and the name of the day—be considered correct, we should arrive at the days Ocelotl, Quiauitl, Cuetzpalin, and Atl as the first days of the years named for the characters Acatl, Tecpatl, Calli, and Tochtli. This result is at first sight rather attractive. We should thus arrive at precisely the characters which answer to the signs Ix, Cauac, Kan, and Muluc, with which the Mayas began their years in later times. It would then follow that the correction which was made by the Mayas also found acceptance among the Mexicans. I believe, however, since there are no other proofs, and since our computation is upheld by the statements of historians, that if the ninth day of Quecholli had been a day Ehecatl only 643 days would have elapsed before the capture of Quauhtemoc, and then one of the two above dates, that given by Bernal Díaz or that given by Cortes, would have to be corrected; and since reasons of a general nature, as I have said before, favor the view I have advanced we must not lay too much stress on this one assertion, especially as an error seems very probable. As I have already said, it is our manuscript, with its festival dates running through nearly nineteen years, which furnishes decisive evidence. Chimalpahin wrote at the beginning of the seventeenth century and the Sahagun manuscript was composed about the year 1559. At those periods the ancient mode of reckoning the festival dates had long since fallen into disuse. The manuscript of the Humboldt collection is of ancient date, as is shown by the style of the drawing and by the dress of the figures. Its testimony is of decisive value.

After settling these points, which are generally necessary and also useful for the proper understanding of our manuscript, I now return to the dates given in columns A and B of our manuscript. In the beginning of this chapter I mentioned that the lower part of the manuscript is incomplete, that the upper part seems to be the actual end of the strip, and that the strip was not farther written upon because, for some reason, entries were no longer made. It would be interesting if we could determine to which one of our years the year corresponds in which the last entries were made. The entries of material objects, of whose nature I shall speak directly, fill columns C and E. The last entries were made, as a glance at the manuscript shows, in the month Ochpaniztli of that year in which the feast Etzalqualiztli was celebrated on the day 3 Ehecatl. In this year, as

I have already stated above, the first day of the first month (according to the usual method of calculation) fell on the day 1 Calli. And this is precisely the year designated by the numeral 3 and the sign Calli, in xiuhtonalli ei calli, which corresponds to the year 1521 of our chronology, in which Quauhtemoc surrendered himself and the ruins of the city of Mexico to the victorious Cortes. The last entries of material objects in our manuscript were made on the feast Ochpaniztli of that year, about 37 days after the fall of the city of Mexico.

I shall now proceed to discuss the nature of these entries of material objects. They begin at the bottom of column C and for the first 28 squares are confined to this column alone. From the twenty-ninth square on other entries occur, which fill column D, and from the forty-fifth square on the last column, E, is also filled with entries.

These entries doubtless record entrance duties or other revenues, which were payable quarterly in equal amounts. They embrace five classes of objects: (1) small square plates, which are always entered by tens; (2) oblong rectangular strips, which occur singly or in pairs; (3) narrow triangular strips, which occur singly, in pairs, or in fours; (4) shallow bowls filled with some powdered substance, which are set down singly or in pairs, and (5) bundles of textiles or articles of clothing, which also occur singly or in pairs. All are painted in the same brownish-yellow color, except that in class 4 the bowls are frequently distinguished by a darker greenish coloring from the yellow contents.

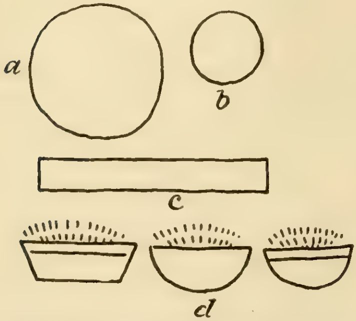

FIG. 32. Symbols of gold bars, plates, and bowls of gold dust from Mexican codices.

The small number of articles of each class which were to be delivered during the quarter leads to the supposition that they were articles of value. Indeed, I am of opinion that class 1 means bars of gold; classes 2 and 3, gold plates of special forms; class 4, bowls of gold dust; and class 5, woven coverlets and articles of clothing, which were also used as a medium of exchange, as money. Bars of gold (*a* and *b*, figure 32), gold plates (*c*, figure 32), and bowls of gold dust (*d*, figure 32) are enumerated in the tribute list and in the Mendoza codex among the tributes of the cities of Mixteca alta and baja: *a* is described as "tiles of fine gold, of the size of a plate and as thick as a man's thumb"; *b* is called "golden tiles, of the size of a consecrated wafer and the thickness of a man's finger"; at *c* is shown "a small gold plate four fingers wide and three-fourths of an ell long, of the thickness of a sheet of parchment"; the symbols marked *d* represent "bowls (jicaras) of gold dust".

As to the sum of the articles delivered during every quarter of a year, in the first twenty-eight quarters, during which entries were made only in column C, 10 gold bars, 2 square and 2 triangular gold plates, and 2 bowls of gold dust were delivered in every quarter. Beginning with the twenty-ninth quarter, that is, if our computations given above be correct, beginning with the year 1511, there was a new payer of tribute, as it seems, the chieftain of a city, who is represented in column E (*m*, plate IV) at full length, with his name hieroglyph and the hieroglyph of the city itself. In the principal column C (*n*, plate IV), the sum of the payments delivered every quarter is lessened by one long triangular plate; but, on the other hand, we find in column D (*p*, plate IV), beginning with this square, entries for every quarter of a year consisting of a bundle of textiles, a square and a long triangular gold plate, and a bowl of gold dust. Beginning with the thirty-third square, in the year 1512, a second new tributary seems to have been added, the chieftain of the city of Zacatlan, who is also portrayed in column E (*q*, plate IV) at full length, with his name hieroglyph and the hieroglyph of his city. From this square onward, the amounts paid during every quarter are doubled in column D. There are 2 bundles of textiles, 2 oblong rectangular and 2 long triangular gold plates, and 2 bowls of gold dust. Beginning with the forty-fifth square, three years later (1515), we have a third new tributary, the chieftain of Tenanco, who is depicted in the corresponding section of column E (*r*, plate V) at full length, with his name hieroglyph and the hieroglyph of the city of Tenanco. After this section the amount of tribute paid in each quarter is increased by a bale of articles of clothing, 2 long triangular gold plates, and a bowl of gold dust, which are regularly entered in the fifth column, E. And finally, beginning with the sixtieth section, the month Tlacaxipeualiztli of the year 1519, the last payments, those set down in column E (plate VI), are also doubled. This is the first section in column D in which a figure occurs. Thus the entries go on uniformly up to the seventieth section, the last in which entries were made.

The question now arises, To whom were these regular quarterly payments made which are entered in columns C to E. At the outset, it should not be supposed that the name of the receiver of the tribute, whether a city, a king, or a temple, or whatever else, is given on the tribute list, for the entries were undoubtedly made on a list which was in the hands of the receiver of the tribute. Thus, in the well-known list of tribute paid to the kings of Mexico neither the kings nor the city of Mexico are mentioned. On the first page of the tribute list (Mendoza codex, page 19) the last Tlatelolcan kings are only mentioned incidentally, together with the contemporaneous Mexican monarchs. However, our manuscript is not a tribute list like those just mentioned, which enumerated the tribute to be paid by the various cities. Our manuscript is a cashbook, in which an account is kept of the receipts of the year. It is a kind of financial record, and as such naturally afforded opportunity for other historical entries. Besides the additions of new tributaries already mentioned these consist of the notices of deaths and of the successors of the deceased. Deaths are expressed in the manner usual in Mexican picture annals, by a mummy bundle, with a name hieroglyph, usually seated in a chair like a living person. Accession to office is expressed by the figure of the living person, with his name hieroglyph, seated according to his rank, either on a simple straw seat, or on the royal chair provided with a back; for omotlali, " he has taken his seat ", or motlatocatlali, " he has seated himself as a ruler ", are the expressions by which the Mexicans described accession to power. Where it is a question of actual rulers, authority is usually expressed by the little tongue in front of the mouth, which in Mexican paintings was a symbol of speech; for tlahtouani, " he who speaks ", was the Mexican name for a ruler or king.

The most important of these figures are undoubtedly those which appear in column A, the first, counting from the right. For here, in a conspicuous place, we may expect to find the names and the dates of accession to power of those men who lived where these lists were prepared, and who were therefore the actual recipients of the tribute. It is important to note here that of the four figures of living persons who are portrayed in this column only the one in square 53 wears the xiuhuitzolli, the turquoise mosaic headband of secular rulers and nobles, and is characterized as of higher rank, as a king, by the straw seat with a back. The other three have the hair merely bound with a strap, their seat is without a back, and they bear on their backs, by a cord slung round the neck and knotted in front, a small yellow object flanked by two large gay tassels. This object is the so-called ie-quachtli, the " tobacco cloth ", a small pouch (taleguilla), in which the priests carried the incense pellets. The cord with the tassels, to which the pouch is attached, is called mecacozcatl, " necklace of agave-fiber rope ". The little pouch is called ie-quachtli, " tobacco cloth ", because the incense pellets, which are called yaqualli and described as pills or pellets shaped like mouse droppings, were made of " tinta "; that is, probably of yauhtli, or iauhtli, " incense plant ",[a] mixed with pulverized tobacco leaves con polvos de una yerba que ellos llaman yietl, que es como beleños de castilla (" with dust of an herb which they call yietl, which is like henbane ").[b] Tobacco played precisely the same part among the priests and medicine men of ancient Mexico as it has from the remotest times down to the present day among the various savage tribes of North and South America.

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[a] One meaning of the syllable iauh is " incense plant ". Compare Sahagun, v. 2, pp. 25, 35, and the hieroglyph of Yauhtepec in the Mendoza codex, v. 26, p. 14. But it also means " black ": yauh-tlaulli, " mayz moreno ó negro " (Molina).

[b] Sahagun, v. 2, p. 25.

The tobacco pouch (ie-quachtli) or tobacco calabash (ie-tecomatl) was, therefore, the special badge of priests. I have brought together, in *a* to *k*, figure 33, a number of figures of priests from the Mendoza codex and the still unpublished Aztec Sahagun manuscript of the Biblioteca del Palacio at Madrid, with incense basin and copal pouch, with sacrificial knife and copal pouch, and with the great rattle stick Chicauaztli in their hands, and upon the back of each is plainly to be seen the tobacco pouch or tobacco box (painted yellow or brown in the original), between two large tassels. Only the priest's assistants, called "quacuilli", who in *i* hold the victim by the arms and legs and in *l* bring down the burning billets of wood from the temple, are dressed differently, simply like messengers of death. Therefore, there can be no doubt that the figures drawn in column A

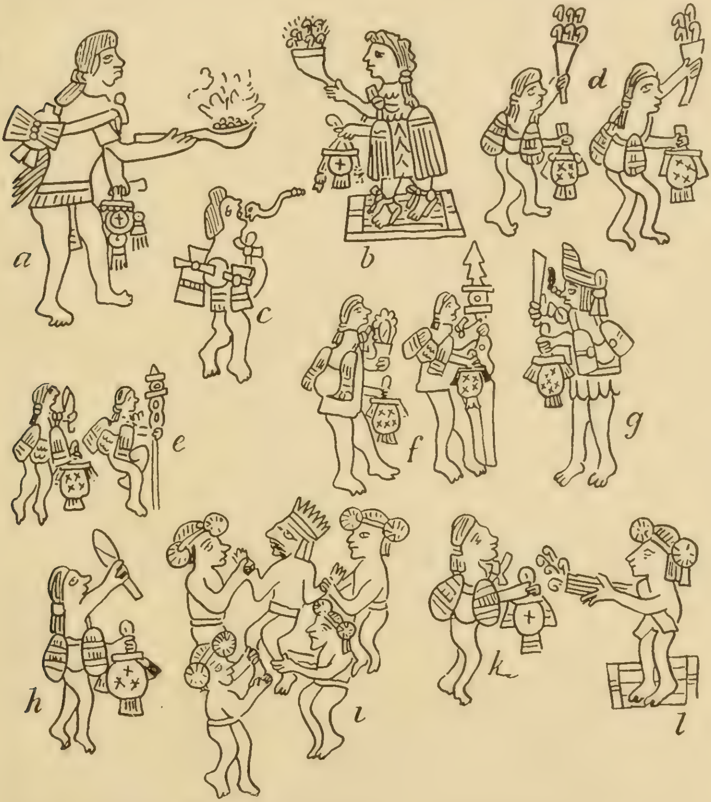

FIG. 33. Figures of priests from Mendoza codex and Sahagun manuscript.

of our manuscript, in squares 16, 62, and 72, and the mummy bundle in square 60 are meant to represent the figures of priests. But it should be noted that the priests in our manuscript do not carry an ie-quachtli but an ie-tecomatl on their back, one of peculiar shape, with lateral projections which were probably made of gold.

But while the prince drawn in section 53, column A, has no little tongue—the symbol of speech and of a ruler (tlahtouani)—before his mouth, the tongue is plainly to be seen before the mouth of the figures of priests in squares 16 and 22, which in the figure in square 62 has possibly only been blotted out by time or carelessly omitted, for the mummy bundle in square 60 has the same name inscribed upon it as the living person in square 16. The priest in square 62 is, therefore, the direct successor in office to the priest in square 16, designated by the little tongue as tlahtouani. For this reason, and also because priests are chiefly represented in column A, I believe I may safely conclude that it was a temple which received the valuable tribute recorded in columns C, D, and E. This also explains why, as I stated above, the pictures of princes and cities are given wherever the list records an increase in the amount of the tribute due every quarter. If tribute wrung from conquered cities by a king were recorded here, then, doubtless, the conquest of the city or the death of the king would be noted in the same place. That the temple of an idol was the recipient of the tribute very simply explains the fact that the entries must have ceased soon after the fall of the city of Mexico.

But now where was the temple whose cashbook our manuscript represents? The answer ought to be found in the hieroglyphs which accompany the various figures represented in the manuscript; but unfortunately these are not numerous enough, nor are all of them sufficiently clear. I will proceed to discuss these hieroglyphs column by column; but I must observe at the outset that it is precisely in the hieroglyphs that Kingsborough's draftsman has made many mistakes, both in drawing and color.

In column A, square 16, the name hieroglyph introduced behind the head of the figure shows a cloth, which is apparently held up by two hands. The cloth is painted white, the hands yellowish brown. The hieroglyph seems to refer to an act which we see represented several times in the Zapotec Vienna codex and also in the Mayan Troano codex (see *b* and *c*, figure 34), which is the tying on of the shoulder cloth; possibly, also, its exhibition, presentation, or offering for sale. In the Manuscrit Mexicain number 3 of the Bibliothèque Nationale at Paris there is a hieroglyph (*a*, figure 34), which shows a shoulder cloth and a hand. It represents the name of a citizen of Uexotzinco who is set down as among those who, escaping, withdrew from the control of the encomenderos and the curas, and bears the legend "Andrés Tilmatlaneuh", that is, "Andrew, the cloth-lender".

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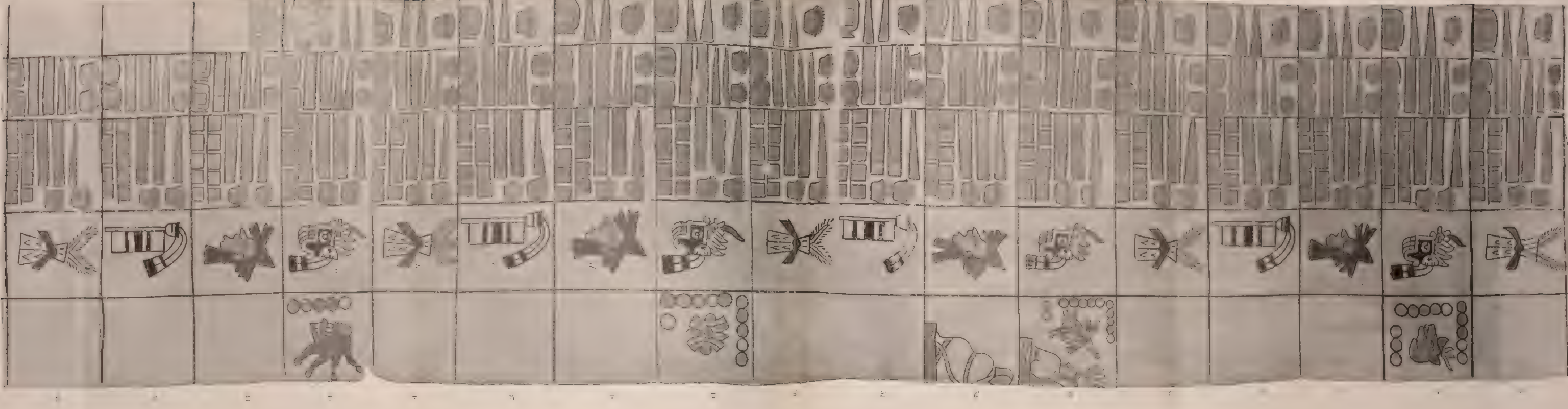


MEXICAN PAINTING—HUMBOLDT FRAGMENT I, PART 4

In square 52, column A, is seen a hieroglyph behind the mummy bundle, consisting of a stalk painted bluish-green, holding a red object, from the left side of which hangs another object painted yellow. This is probably meant for an ear of corn with its bunch of silk hanging at one side. The name of the person whose death is announced here should therefore be read Xilotl, or Cacamatl, "young ear of corn".

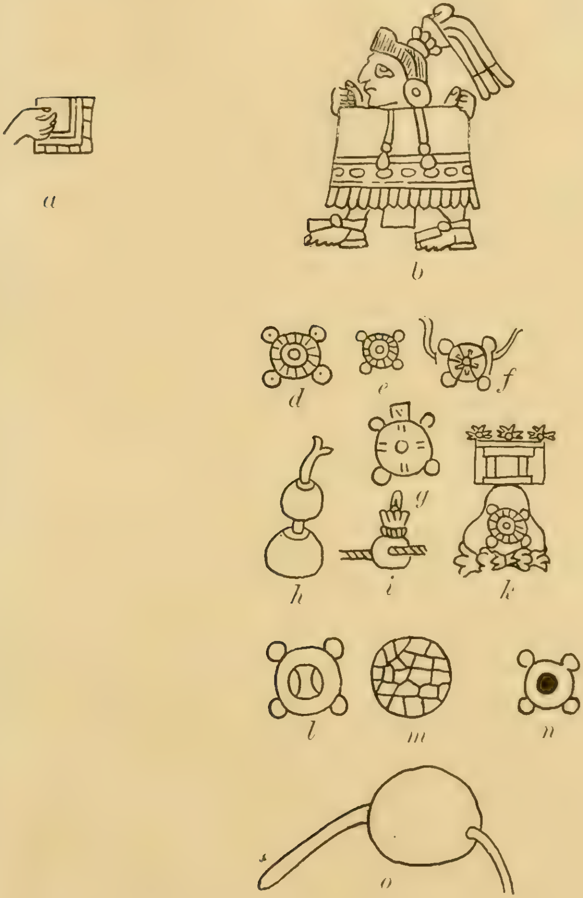


FIG. 34. Symbols of cloth and precious stones.

His successor, in square 53, decorated with the princely headband, is designated by a hieroglyph painted yellow, which I can not interpret with any certainty.

The mummy bundle, in square 60 of column A, has the same name hieroglyph as the figure in square 16. Apparently the death of the same person is here announced whose entrance into office is proclaimed in square 16.

His successor, in square 62, has for his name hieroglyph a single bead drawn on a strap. This is probably to be read Chalchiuh. The principal precious stones among the Mexicans were the chalchiuitl, which comprised jadeite and other stones of a similar green color, and xiuitl, the "turquoise". Both were represented hieroglyphically as lustrous bodies, like the brilliantly polished mirror tezcatl (marcasite or obsidian), with eyes at the four corners, that is, sending out rays in four directions. The forms *d* to *f*, figure 34, represent chalchiuitl; *l*, xiuitl; and *n*, tezcatl. The chalchiuitl was preferred for necklaces (cozcatl), beads, and bracelets (macuextli) because turquoise (xiuitl) was too valuable, and was not found in such large pieces. Turquoise was used especially for incrustations and mosiacs. The precious ear pegs (xiuhnacochtli), the diadems of the Mexican kings (xiuhuitzolli), were made of turquoise mosaic. When, instead of the hieroglyphs for chalchiuitl and xiuitl, the object itself was drawn, the word xiuitl was represented by an incrusted disk, *m*, and the word chalchiuitl by one or two strung beads, as we see it in *h* and *i*, which are taken from a Historia Mexicana of the Aubin-Goupil collection (Goupil-Boban Atlas, plates 60, 59). The form *h* stands for the chalca tribe, which is designated by the hieroglyph chalchiuitl, *d*, in a corresponding representation in the Boturini codex, published in the Kingsborough collection. The form *i* expresses the name of one of the four barrios of Aztlan, which is also to be read Chalco. On the lienzo of Tlaxcala the town of Chalco is also designated by a large bead. Comparison with these figures places it, I think, beyond a doubt, that the hieroglyph in square 62 of column A is likewise to be read Chalchiuh.

Of the persons in column A there still remains the one in square 72. The name hieroglyph is plainly a shield, but there was something else above it which can no longer be deciphered, as only a few remnants of blue paint are left of it. Possibly there was a blue royal headband above it, in which case it would have to be read Chimaltecuhtli. A man by this name, chieftain of Calixtlahuacan, is mentioned in the Anales de Chimalpahin in the year 1484.

Finally, there is still the hieroglyph of a place, section 68 in column A. Arrows are drawn flying toward it or sticking into it. This is probably meant to signify the conquest of that place. The hieroglyph consists of the well-known drawing of a mountain (tepetl), of a string of beads laid around its summit (cozcatl, "necklace"), and a number of objects on the top of the mountain which I can not explain with any degree of certainty. The object which forms the actual pinnacle of the mountain is painted brown, and oblique stripes are plainly visible, between which the color seems to be darker. This may therefore possibly represent the hieroglyph of stone (tetl). The square body above it is painted black. This may, perhaps, be intended for a piece of obsidian (iztli). According to this, we have itz-te-cozca-tepe as elements of the hieroglyph; but I can not construct any place name known to me out of these elements.

I will now pass on to columns D and E. In D we have in square 60 the mummy bundle and a hieroglyph which in the Kingsborough drawing is absolutely incomprehensible, but which in the original, and also in our reproduction, can be recognized, with some difficulty, to be sure, as the head of a beast of prey with outstretched tongue. We should read this Ocelotl, "jaguar". A seated figure then follows, in square 61, whose head is not adorned with the royal headband, the xiuhuitzolli, and whose long hair hangs down behind, wound round with a strap, after the manner of priests. A cactus branch is behind it, by way of name hieroglyph. Cactus branches, with the blossoms, often occur in the register of names of persons of Uexotzinco and Xaltepetlapan (Manuscrit Mexicain number 3, Bibliothèque Nationale, Paris), shown in figure 35 (*a*, 1 to 5). There they denote the name Nochuetl, which is also frequently mentioned in the Anales of Chimalpahin. A cactus branch in conjunction with an arrow is likewise used there to represent the name Tziuac mitl, *b*. It seems, therefore, that a variety of cactus was meant by Tziuactli, or tzinuactli. This name, too, which likewise occurs in the Anales of Chimalpahin, might be expressed by the hieroglyph in square 61, column D (plate VI).

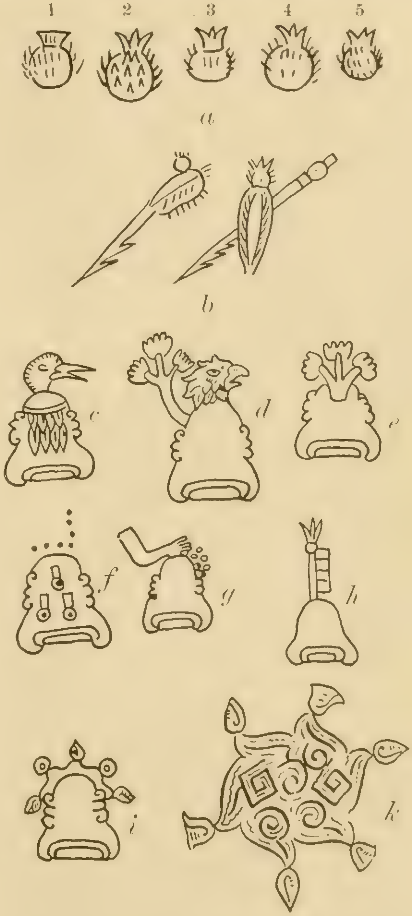


Fig. 35. Symbols of personal and place names in Mexican codices.

In the hieroglyph which accompanies the mummy bundle, in square 64, column D (plate VI), I think I recognize the head of a deer and an upright tuft of feathers. The deer is mazatl, and the upright tuft of feathers should probably be read quetzalli. According to this we should have mazaquetzal, and this is a royal name well known from the Anales of Chimalpahin, that is, in the territories of Chalco, Tlalmanalco, and Amaquemecan.

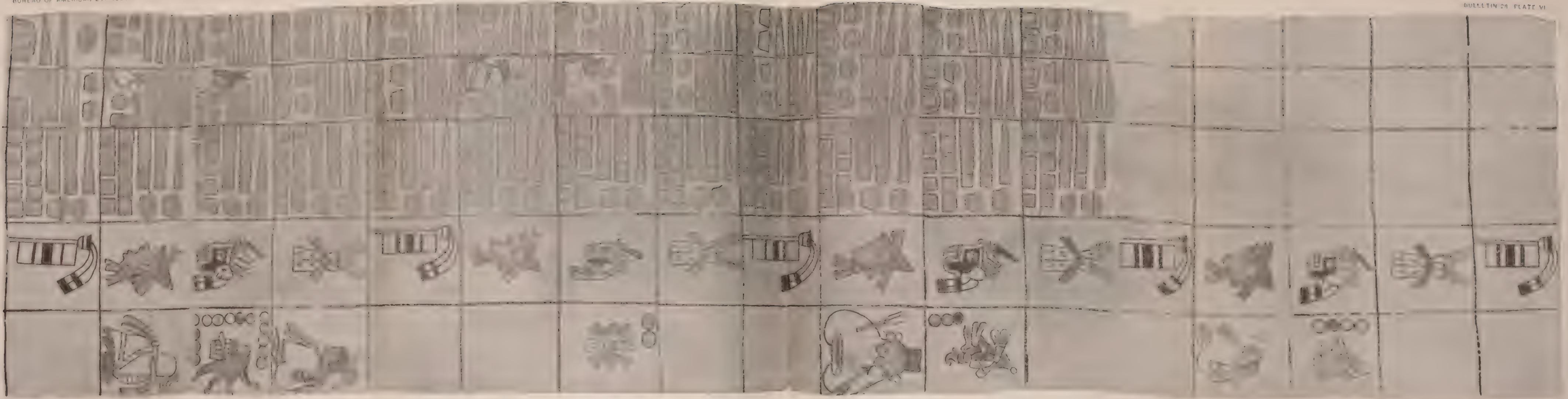
The next figure in column D, square 65, is described by a hieroglyph which is obviously the picture of a snake. The head is above on the left, and is white. The forked tongue protruding from the mouth is plainly visible. The body is painted yellow. A rattle seems to be drawn at the end of the tail, which is left white like the head. The name might therefore be read Coatl, " snake ".

Finally, in column E, as already stated, in sections 29, 33, and 44 (plates IV and V), three chieftains are drawn, with their name hieroglyphs and the hieroglyphs of the cities ruled by them.

The hieroglyph of the city in square 29 shows us a mountain (tepetl) which seems to be formed of streams of water moving in a circle. A mountain of water might be read Atepec. A city is recorded by this name in the Mendoza codex, page 16, among the conquests of the younger Motecuhzoma, and is expressed there by the drawing of a mountain with a stream of water on it (*i*, figure 35). In Mexican hieroglyphs of towns, however, a mountain often serves merely to show that reference is made to a place or a place name, that is, to express the syllable co or can; compare, for instance, the hieroglyphs of the cities of Aztaquemecan, Quauacan, Quauhyocan, Chiconquiauhco, and Nepopoalco, from the Mendoza codex (*c* to *g*), and those of Tzompanco (*h*), Tlacopan, Toltitlan, etc., from the Osuna codex. If we take this into consideration, then, since the water in our hieroglyph in square 29 is apparently drawn moving in a circle, we should perhaps read it Almoyauacan, " where the water moves in a circle ". This is the name of an ancient village which is mentioned, after Uexotzinco and Xaltepetlapan, with their barrios (calpulli) and the persons belonging to them in the Manuscrit Mexicain number 3 of the Bibliothèque Nationale, Paris. There (*k*) the water flowing in a circle is much more plainly drawn than in our hieroglyph. But since, as we shall see, both the succeeding hieroglyphs also refer to territories adjacent or friendly to Uexotzinco, I think it quite probable that the place hieroglyph in square 29, column E, should be read Almoyauacan.

The chieftain of the place is designated hieroglyphically by the head of a jaguar. His name must therefore have been Ocelotl, or Tequan, " beast of prey ".

The place which is meant to be designated in square 33 (plate IV) is represented by a bush painted bluish green. Unfortunately, this hieroglyph is also open to various readings. The Mexicans expressed the word zacatl, " grass ", by a similar bush (see in the Mendoza codex the place names Zacatlan, Zacatepec, and Zacatollan, shown in *a*, *b*, and *c*, figure 36) ; but they also painted the same thing when they



MEXICAN PAINTING—HUMBOLDT FRAGMENT I. PART 5

wished to say popotl, "broom", for the broom was made of a variety of stiff grass (see the hieroglyph Popotlan, *d* and *e*); and, finally, they also painted it to express the green bushes known as acxoyatl, on which they offered the blood which flowed in tortures, self-inflicted in honor of the gods (see *f*, taken from the Sahagun manuscript of the Biblioteca del Palacio, expressive of the religious ceremony acxoya-temaliztli, "the laying down of green bushes before the idols"). For the interpretation of our hieroglyph in square 33 we thus have a choice of Zacatlan, Popotlan, and Acxotlan, all well-known place names, any one of which might be correct. Of these I think we may exclude Popotlan, for in its hieroglyph the band which fastens the bush to the broom is usually given. But we might choose between Zacatlan and Acxotlan. A place named Zacatlan is quite regularly mentioned, together with Uexotzinco, Tlaxcallan, Tliliuhquitepec, and Chollollan, in the chronicle of Tezozomoc. The Anales of Chimalpahin also mention together Chichimeca, Tenanca, Cuixcoca, Temilolca, Zacanca, and Yhuipaneca. Acxotlan was one of the most important barrios of Chalco. The fact that the grass (zacatl) in the place name is usually painted yellow, while green seems to be the color most naturally applied to the bush (acxoyatl), militates perhaps in favor of the latter meaning.

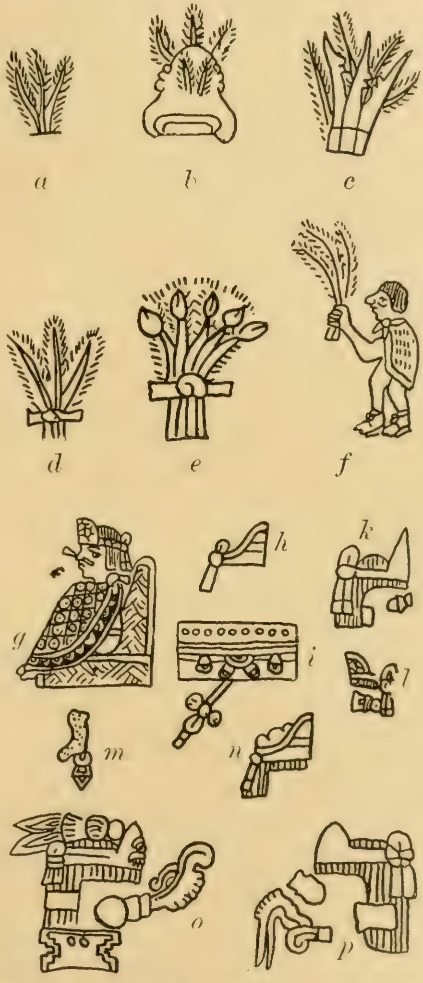


FIG. 36. Symbols of place and personal names, Mexican codices.

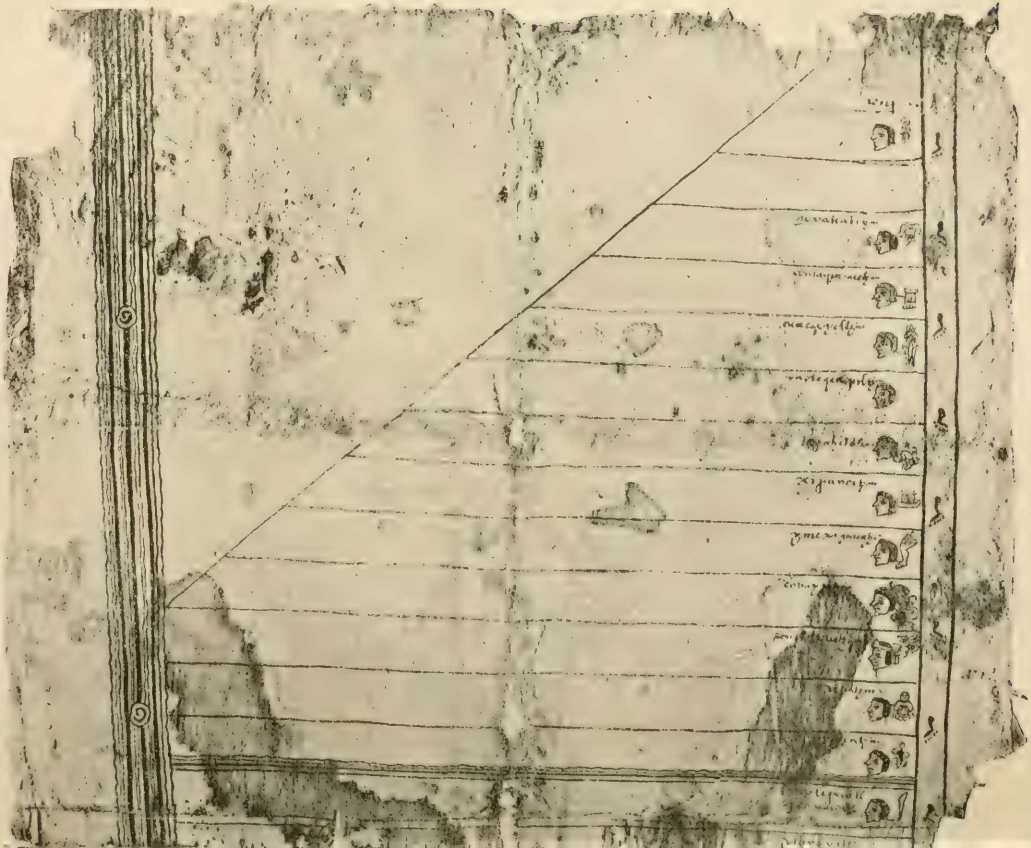
The hieroglyph of the chieftain of this city is likewise quite unintelligible in the Kingsborough drawing. In the original we can make out, with some difficulty, to be sure, but still plainly, the head of a deer (mazatl), with the eyelids painted yellow and with blue antlers resting on a yellow base, quite in the manner in which the day sign Mazatl, is drawn and colored in column A. Above it are twelve little circles of various colors, arranged in divisions of 5, 5, and 2. This is undoubtedly meant for the number 12 (matlactli omome). The person drawn here is therefore called by the name of a day, matlactli omome mazatl, "12 deer", which was possibly the day of his birth or had some other connection with him.

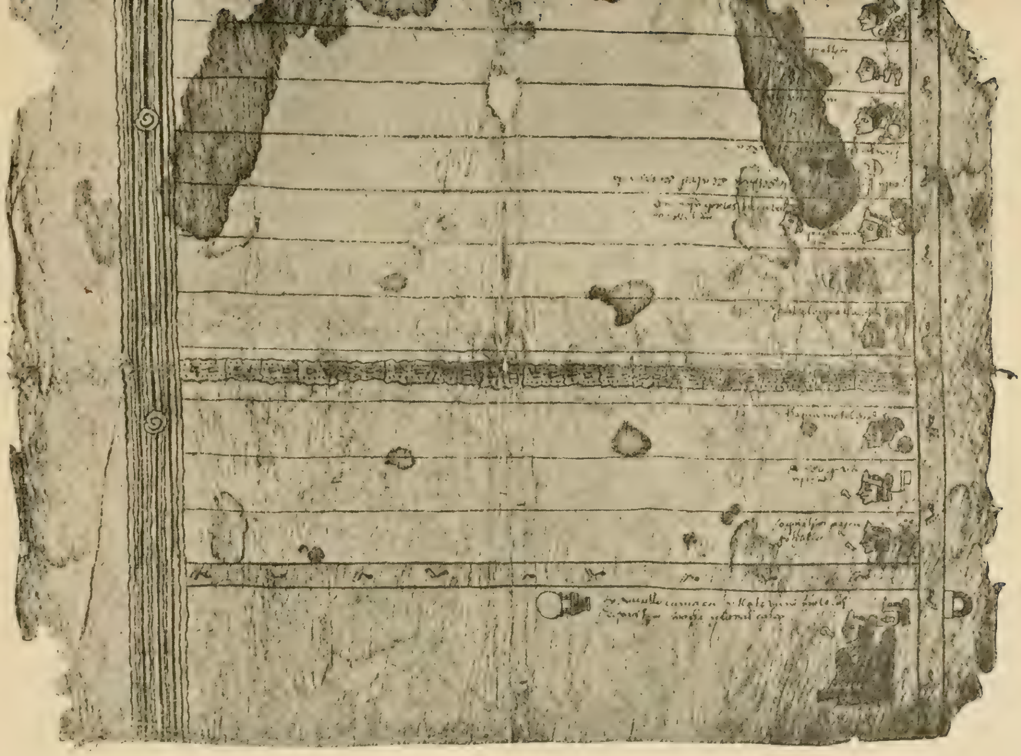
Finally, the wall crowned with battlements under the figure of the chieftain, in sections 44 and 45, undoubtedly stands for the place name Tenanco, "at the place of inclosures". The name hieroglyph of the chieftain is again quite unintelligible in Kingsborough, and it is incorrectly painted green. In the original there is not a trace of color to be seen. With some difficulty the hairy head of an animal can be recognized, which is probably intended for a rabbit (tochtli), and the name should probably be read accordingly.

If, in conclusion, we now turn to the question of the origin of the manuscript, we see that the analysis of the hieroglyphs leads to no definite result. The most important hieroglyph, the place name, in section 68, column A (plate VI), can not be interpreted with certainty. The other place names can, indeed, be explained with some degree of certainty, but they leave room for doubt, insomuch as places called Tenanco and Zacatlan occur in different localities. Nevertheless, I believe that the combination of the names Tenanco, Zacatlan (or Acxotlan), and, possibly, if my interpretation is correct, Almoyauacan points to a particular region, the land of the Uexotzincas and Chalcas, the valleys and slopes at the southern and western foot of the volcanoes Popocatepetl and Iztaccihuatl. In this region also, as we know from Chimalpahin, various tribal heads bore the title Teohua teuhctli, "priest-prince". Nezaualcoyotl and the great Motecuhzoma, the elder, went thither to obtain from the tribal chief a victory-insuring fetish, the otlanamitl teueuelli, the four bamboo arrows, and the shield of the war god. I do not believe that the "Monte Sacro", the famous shrine of Amaquemecan, was the one to which our manuscript refers, for in that case we should be able to verify the names of persons from Chimalpahin. But, besides the great sanctuary, there must have been others in the immediate neighborhood and more remote. Let us hope that among the many records which were made in the first century after the conquest something may yet be discovered which shall establish the identity of the persons and places of our manuscript beyond all possibility of doubt.

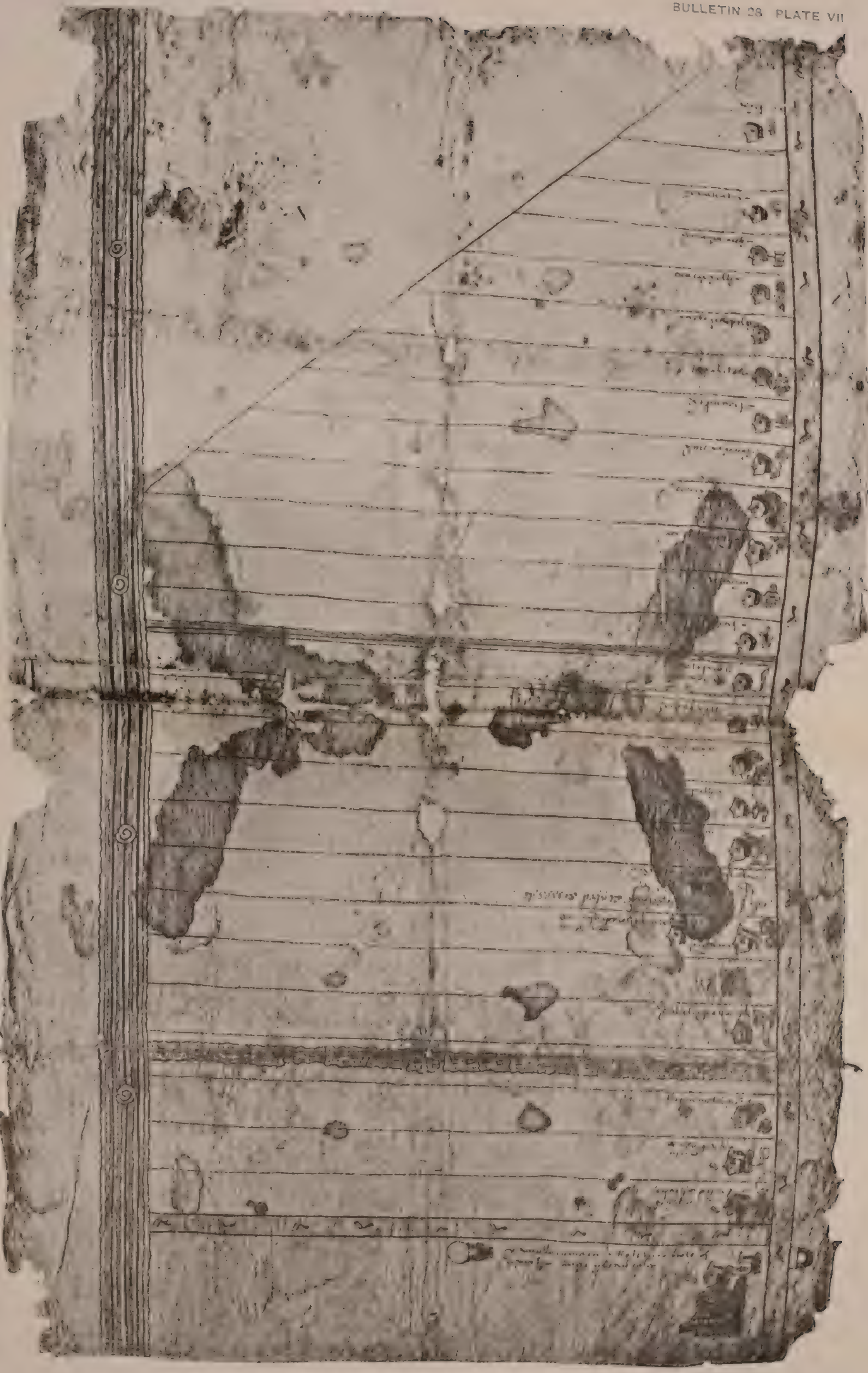
FRAGMENT II

This fragment (plate VII) is a strip of agave paper 68 cm. long and 40 cm. wide, covered with drawings and writing on one side. It is the page which Alexander von Humboldt describes in Vues des Cor-





MEXICAN PAINTING—HUMBOLDT FRAGMENT II



MEXICAN PAINTING—HUMBOLDT FRAGMENT II

dillères et Monuments des Peuples indigènes de l'Amérique, under the title " Généalogie des Princes d'Azcapotzalco ".

The drawings on this page (plate VII) occupy a space bounded by straight lines, to the right of which a path showing footprints and to the left a body of water, stream or sea margin, indicated by drawings of waves and whirlpools and by a light blue color, run the whole length of the page. Near the lower edge a second path, beginning at right angles to the first, leads straight across the page to the water, and about the center of the page a small body of water, also beginning at right angles to the principal path, crosses the page in like manner. The whole space above the lower path is divided by horizontal lines into 27 divisions, which, however, decrease in length from the seventeenth down in consequence of a boundary line which begins at the left and runs diagonally upward to the right. In one of these divisions, the fourth counting from the lower path, a row of dark figures filled in with dots and angular lines runs straight across the page. In Mexican picture writing this is the way in which the idea of tlalli, or milli, " acre ", or " field ", is expressed. The other divisions, except two which are empty and a third in which a kind of explanatory note is written, are each provided with the head and the hieroglyph of a particular person.

This general arrangement of the page shows that we can hardly have to do here with a genealogy, as von Humboldt supposed. The whole arrangement far more closely resembles a doomsday book, a map of public lands, or a register of landed property; and this in fact it is proved to be by the writing, which occurs in the lowest division below the lower path.

In this division we see to the right the picture of King Motecuhzoma, the ninth king of the Mexicans, known as Xocoyotzin, " the young ", in contradistinction to Ueue-Motecuhzoma, the elder Motecuhzoma, the fifth king of the Mexicans, whose other name was Ilhuicamina, " he who shoots at the heavens ". To the left is the picture of a hut built of straw or reeds, painted yellow above a white circle. And between the picture of the king and the figure of the hut are the words: y xacallo camaca y tlatovani motecuhzomatzin mochi ytonal catca (" the country house of Camaca: all parcels of land which belonged to King Motecuhzoma "). The word tonalli, which is here the most important word, deciding the meaning of the whole, means " glow ", " warmth of the sun ", " summer " in its more literal application: but it also means the " character " or " signs " of a day or a year; that is, one of the 20 pictures by which the Mexicans designated their days or one of the 4 of these which designated the years. Hence follows the secondary meaning, " fate decided by the day of birth ", and lastly, in general terms, " that which is assigned to anyone ", that is, what is allotted to him, his portion, his fate. Thus Molina in his dictionary gives: "racion de alguna, ó cosa diputada para otro" ("allowance of something, or a thing assigned to another"), and for tlalli te-tonal, "suerte de tierra agena" ("a piece of land belonging to another person").

I will now proceed to describe the separate pictures and hieroglyphs. King Motecuhzoma, in the lowest divisions of the fragment, below the lower cross path, is represented at full length, seated on a chair woven of reeds (tepotzo-icpalli), which is like the others, but is provided with a back. He is dressed in the royal blue garment (xiuhtilmatli), which is woven in openwork and trimmed with a red border of eyes (tenchilnauayo), probably of feather work. On his head he wears the band of turquoise mosaic (xiuh-tzontli, or xiuhuitzolli). There is a small blue tongue before his mouth, the symbol of speech and power (tlahtouani means both "the one who speaks" and "the king"). Mexican kings are drawn in almost precisely the same way in the Sahagun manuscript belonging to the Academia de la Historia (see *g*, figure 36), except that here is given the turquoise bar (xiuh-yacamitl) which Mexican kings wore in the pierced septum of the nose, as a distinguishing ornament, when they put on gala dress. I have also taken from the Sahagun manuscript the terms just used for the various articles of royal Mexican dress.

Motecuhzoma means "the angry lord". The idea of angry could not well be expressed by the Mexicans in hieroglyphs; but it was otherwise with the idea tecuhtli, "lord", "prince". To express this idea they merely drew and painted the turquoise headband (xiuhtzontli, xiuhuitzolli), the emblem of kings. Thus we find both the older and the younger Motecuhzoma hieroglyphically designated simply by the xiuhtzontli (compare *h* and *n*, figure 36, from Codex Telleriano-Remensis, volume 4, pages 6 and 13). The former is intended for the elder Motecuhzoma and the latter for the younger. Usually, however, to prevent confusion, the elder Motecuhzoma is hieroglyphically designated by an arrow sticking in the picture of the heavens, *i*, a hieroglyph, which represents his other name, Ilhuicamina, "he who shoots at the heavens". The younger Motecuhzoma, on the other hand, is more particularly designated by a peculiar element added to the royal headband, which is visible in the hieroglyph of our picture as well as in *k*, figure 36 of the Mendoza codex, and Sahagun manuscript, Academia de la Historia, page 68. Why this element should express the idea xocoyotl, "the younger", I can not state, and would merely mention that a similar element is to be seen in the Sahagun manuscript of the Academia de la Historia on the leg painted white and dotted with black, *m*, figure 36, which represents the name of the seventh Mexican king, Tizoc or Tizocic (Tizocicatzin). I still think it very doubtful whether *o*, which occurs on the great so-called calendar stone in the upper left-hand triangular space, is meant for a hieroglyph of Motecuhzoma, as is often assumed. Here the xiuhtzontli is combined with the breastplate of the fire god. In a corresponding place on the other three triangular spaces are the dates, 1 Tecpatl, 1 Quiauitl, 7 Ozomatli, which appear also to denote certain deities. I think that King Motecuhzoma took his name from one of the cognomens of the fire god; for el señor enojado, "the angry god", which is the meaning of the name Motecuhzoma, is a fit title for the god of devouring fire. I think I distinctly recognize the hieroglyph of the younger Motecuhzoma in *p*, which occurs on the inner side of the cover of a cinerary casket, which bears on the outer side (the top) the date 11 Tecpatl. Peñafiel reproduced this casket in his "Monumentos del arte mexicano", and regarded the hieroglyph as that of King Nezaualpilli, of Tetzcoco, said to have died in the year 11 Tecpatl, or A. D. 1516. But, in the first place, the year of Nezahualpilli's death has never been precisely determined. According to Chimalpahin, he died a year earlier, in the year 10 Acatl, or A. D. 1515. Furthermore, the hieroglyph has absolutely no connection with the elements of the name Nezaualpilli. On the contrary, all the elements contained in the name Motecuhzoma seem to be expressed in this figure. The royal headband gives us the element tecuh, "prince". The little tongue (symbol of speech) with clouds of smoke rising from it seems to express the element mozoma, "angry", fiery speech, as it were. And finally, the element with which we became familiar in the hieroglyphs *k* and *l*, and which we also see in the hieroglyph of our manuscript, is plainly contained here, and represents the idea of xocoyotla.

Opposite the figure of Motecuhzoma in our manuscript is the picture of a hut built of reeds, called xacalli in Mexican, or jacal, as they still say in Mexico. The circle below probably refers to the place which is here meant, but I can not explain it more fully. As for the location itself, there is no place by the name of Camaca given on more recent maps, and I have sought for it in vain on the older ones. On the map which accompanies the text of the Conquistador anónimo published by Ramusio,[a] there seems to be the only hint of it. This is probably based on the first map that was made from the one officially sent in by Cortes. It differs from the latter, however, inasmuch as the fresh-water lake, which on Cortes's map is shown in very much contracted dimensions on the left of the sheet, is repeated independently on a larger scale on the upper part of the sheet.[b] Upon this map, exactly as on that of Cortes, two forked causeways are given on the north side of the town, which is, however, incorrectly designated by the author as the west side. One of these causeways leads to the left toward Azcapotzalco. The other runs back of the fork due north. Where this causeway reaches the mainland the name Calmacam is written down. Of course, it is doubtful whether we are justified in connecting this name with the Camaca on our fragment II, for on the map of Alonzo de Santa Cruz, of the year 1555,[a] the name Caltlitlan appears in about the same place. Nevertheless, I am inclined to think that there was a boundary line in this region, that is, northward from Azcapotzalco toward Guadalupe. Azcapotzalco was the first of the cities subdued by Mexico, and it is expressly stated that the lands of Azcapotzalco were divided among themselves by the nobles of Mexico, the king taking the lead. There are, in fact, fertile farm lands at the base of the mountain, traversed by streams of water which come down from Tliliuhyacan, Tlalnepantla, and Atizapam. The water drawn on the left side of the fragment may be the seashore, and the road running along the right side may be the one which ran along the southern base of the mountains of Tenayocan and Guadalupe.

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[a] Ramusio, Delle navigationi et viaggi, v. 3, Venice, 1556; García Icazbalceta, Documentos inéditos para la historia de México, v. 1, p. 390.

[b] Dahlgren, "Nägot om det fórna och nuvarande Mexico" (Ymer, No. 1, 1889).

Lastly, on the right side of our fragment, outside the path, there is drawn a figure which seems to represent a kind of box provided with a mecapalli, the broad band of woven straw which was placed across the forehead, by means of which the burden resting on the back was carried. Perhaps this was meant to symbolize agricultural implements.

Above the figure of Moteculizoma, as I have said, runs the drawing of a path. The figures seen on this and on the path at the right are very realistic reproductions of the imprint of a bare foot, the sole and the five toes, in sand or other light soil. These footprints are generally used in Mexican hieroglyphic writing to denote a path, traveling over a path, or journeying or moving in a certain direction.

I will designate the separate divisions or sections above this cross path, proceeding from below upward, by the figures 1 to 27. Divisions 7 and 8 are the most important. In division 7 there is above a hieroglyph, which I will describe later with the others. Beside it is the hieroglyph and the head, adorned with the royal headband, of the brave Quauhtemoc, upon whom the Mexicans conferred the office of king, that is, chief military commander, after the death of Cuitlauac. Motecuhzoma and Cuitlauac were sons of Axayacatl, the sixth king of the Mexicans. Quauhtemoc was a son of Ahuitzotl, eighth king of Mexico, and the power was conferred upon him although there were nearer heirs. In Mexico birth only partially influenced succession to the throne, as also to the other high offices of state. It is well known how heroically Quauhtemoc defended the city of Mexico for 90 days against Cortes, in spite of European military science. His capture, which took place on the date ce Coatl yei Calli, or August 13, 1521 (discussed in the previous chapter), put an end to the war. Cortes at first treated him kindly, but later (according to a marginal note in Chimalpahin it must have happened on the day 1 Ocelotl, that is, as we reckon it, 169 days later, about the end ot the year 1521) sent him and four other influential Mexicans prisoners to Coyouacan and strove to extort from them by torture information as to where were hidden the treasures which the Spaniards had to leave behind in Mexico the year previous at the time of their flight. Quauhtemoc was afterward baptized and named for his godfather Don Hernando de Alvarado Quauhtemoctzin. Cortes appointed him gobernador of Mexico, but afterward had him hanged on suspicion of conspiracy, together with Tetlepanquetzatzin and Couanacochtzin, the kings of Tlacopan and Tetzcoco. This happened in the year 1524 at Ueimollan during the expedition to Honduras. "He died in some sort like a Christian" (ye yuhqui ye christianoyotica momiquilli), says Chimalpahin. "A cross was put into his hand, his

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[a] Nordenskiöld, Facsimile Atlas, p. 109, and Dahlgren, work cited, p. 10.

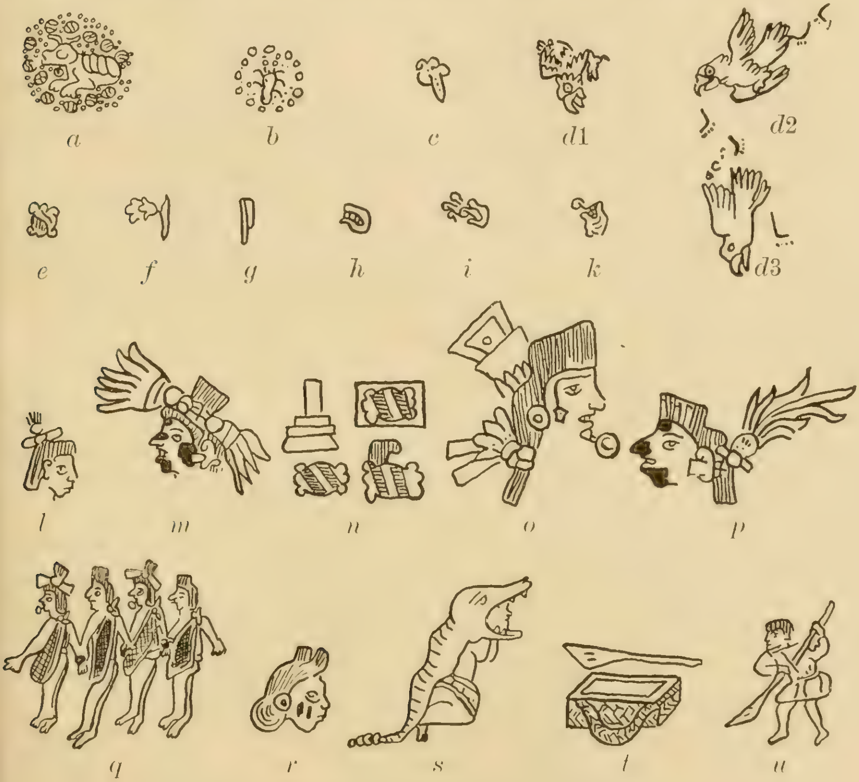

FIG. 37. Mexican symbols of persons and places.

feet were bound together with iron chains, and by these they hung him to a ceiba tree". The execution is represented on page 138 of Codex Vaticanus A; but there he is represented as hanged by the neck in the usual way. From Chimalpahin's words, however, it would seem as though he had been cruelly hung up by the feet.

The hieroglyph of Quauhtemoc, "swooping eagle", is represented in section 7 of our manuscript by the head of an eagle and a footprint directed downward. In the Sahagun manuscript of the Academia de la Historia it is represented by an entire eagle flying downward (*d* 1, figure 37). In Codex Vaticanus A, plates 137 and 138, we also have a swooping eagle and footprints directed downward (*d* 2 and *d* 3, same figure).

The remark added in the following division, the eighth of our manuscript, apparently by the same hand which entered the other names and remarks, also refers to Quauhtemoc's death. In order to read the words the fragment must be turned upside down.

In this division we have two large circles and one small one, filled with an irregular network of lines and painted blue. These are hieroglyphs of the xiuitl, "turquoise", a word which, as I stated above, is frequently expressed by a small disk of turquoise mosaic (see *m*, figure 35). But the word xiuitl means not only "turquoise", but also "grass", "comet", and "year". It is used here in the last sense, for the little flag over the two large circles means "20". The two large circles and one small circle together, therefore, give us 41 years. Accordingly, there is written below them hon poval xivitl oce axca, "(it is) now 41 years". Besides the number at the left is 7 Calli, "7 house"; that is, the year 1524, the year of Quauhtemoc's death. To the right, beside the number, is 8 Calli, "8 house"; that is, the year 1565, which is more fully explained by the accompanying words: ——— (the numeral is not distinctly legible) del mes de abril 1565 años ("on the — of April of the year 1565"). From the year 1524 to the year 1565 there are actually 41 years.

The year 1565, in which this note was added, had a certain significance for the descendants of the ancient royal family of Mexico, as in that year Don Luis de Santa María Nanacacipactzin died. He was the son of Acamapichtli and grandson of Ahuitzotl, who was the eighth king of Mexico. He was the last descendant of the ancient royal family, and was still nominally recognized as regent (gobernador) of Mexico under Spanish rule: "Yehuatl oytech tlamico ynic Mexica Tenucha tlaçopipiltin", says Chimalpahin. This year, therefore, marks the actual end of the ancient royal family, and for this reason Chimalpahin here adds a sketch of the entire ancient history of the city of Mexico and of the Mexican race. We read [a] that when the city of Mexico surrendered to the victorious Cortes after the capture of Quauhtemoc, the chiefs of the Mexicans were assembled at Acachinanco. They were the following: (1) Quauhtemoctzin, King of Mexico (tlahtohuani Tenuchtitlan); (2) Tlacotzin, cihuacohuatl, that is, the King's deputy; (3) Oquiztzin, Prince of Azcapotzalco (tlahtohuani Azcapotzalco-Mexicapan); (4) Panitzin (or Uanitzin), Prince of Ehcatepec (tlahtohuani Ehcatepec); (5) Motelchiuhtzin, the keeper of the royal stores (calpixqui), not a man of royal blood, but a great war chief (amo pilli, yn yece huey yaotiacauh catca). Cortes had them put in chains and taken as prisoners to Coyouacan.

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[a] Chimalpahin, Seventh Relation, pp. 194, 195.

The same four men who are mentioned here with Quauhtemoc are mentioned again in the same order in the account of Quauhtemoc's execution and that of the other two at Ueymollan: Cenca yc tlaocoxque, motequi-pachoque, quichoquillique, yn quinhuicac Mexica tlahtoque ("The princes of Mexico, who had been brought hither, were deeply moved and wept for him"). Their names are given as Don Juan Velázquez Tlacotzin, cihuacohuatl, Don Carlos Oquiztzin, Don Andrés Motelchiuhtzin, and Don Diego de Alvarado Huanítzín.

There is still another native account of events that happened during the siege and after the taking of the city of Mexico. This is the account preserved in the Sahagun manuscript of the Biblioteca Lorenziana, which forms the twelfth book of the work. It is stated there that on the day after Quauhtemoc's capture he and all the dignitaries were taken to Cortes at Atactzinco, to the house of the tlacochcalcatl Coyoueuetzin. Here, directly after Quauhtemoc, are named Coanacochtli and Tetlepanquetzatzin, the kings of Tetzcoco and Tlacopan, and then the following men of high rank: (1) cioacoatl Tlacutzin; (2) tlillancalqui Petlauhtzin; (3) vitznavatl Motelchiuhtzin, mexicatl achcauhtli; (4) tecutlamacazqui ("high priest") Coatzin; (5) tlatlati ("steward") Tlaçolyautl.

When the princes came before Cortes, the three kings of the allied cities of Mexico, Tetzcoco, and Tlacopan took their seats beside Cortes. Then follow mixcoatlailotlac Auelitoctzin and tlatzacutica yopicatl Pupucatzin pilli, who, as a comparison with previous passages shows, are to be regarded as leaders of the Tlatelolcas.

And then we read: "On the other side sat the Tenochcas". Their names are given as Tlacutzin, Petlauhtzin, Motelchiuhtzin mexicatl achcauhtli, tecutlamacazqui Coatzin, and tlatati Tlaçolyautl. These names are mentioned repeatedly on previous pages of the narrative.

If we compare the two accounts, that of Chimalpahin and the one in the Sahagun manuscript, we must at the outset discard the last two persons named in the Sahagun narrative, for they are priests. Of the other three, two are identical with two of those mentioned by

Chimalpahin. The difference between the two narratives apparently can be explained by the fact that in the Anales of Chimalpahin we have in the beginning an account of the interview held with the Mexican princes immediately after the surrender of the city, while the list which then follows does not mention the princes present at this interview, but those whom Cortes afterward sent as prisoners to Coyouacan and put to the torture in order to wring confessions from them in regard to the treasures left behind by the Spaniards in their flight from the city.

If we now return to our manuscript we see that in divisions 5, 3, 2, and 1, below Quauhtemoc, the same four men are named whom Chimalpahin mentions as Quauhtemoc's companions; but the order of succession is somewhat changed, for, whilst we must always think of Tlacotzin as occupying the first place, Oquiztzin must be in the fourth place here instead of the second, as in Chimalpahin.

The four persons, like those named in the other divisions, are expressed in our manuscript by a head with the name hieroglyph behind it. Besides which a scribe, who, as we have seen, made his entries in the year 1565, has added the names of the persons in writing.

Here, as elsewhere, the heads serve to show the rank of the person designated. In our manuscript, Uanitzin and Oquiztzin, who are named above as kings of Ehcatepec and Azcapotzalco, have the royal headband of turquoise mosaic, like Motecuhzoma and Quauhtemoc. These two alone of the four have the little tongue before their mouth, the symbol of speech and also of power. Von Humboldt was of the opinion that the Mexicans intended to designate persons as living by the addition of this little tongue. That this is not the case here is obvious, for Oquiztzin died earlier than the three others, and Motecuhzoma, who also has the little tongue, earlier than any of the four and before Quauhtemoc, who is represented without the little tongue. Apparently the tongue is meant here as the direct hieroglyph for tlahtouani, " the one who speaks ", or " the lord ", " the king ", a pendant, as it were, to the royal headband.

The third of the four, Motelchiuh, who was described above as a war chief, is represented by the peculiar manner of wearing the hair which was a distinguishing mark of warriors. Sahagun tells us (App., chapter 5) that when warriors adorned themselves for the dance they bathed, covered their whole bodies, except the face, with black color, and painted their faces with black stripes, and that instead of combing their hair " they made it stand on end to give themselves a terrible aspect ". There were two different ways, as the pictures show, in which it was customary to arrange the hair on these occasions. One was to draw the hair together on the crown and wind round it a leather strap, to which, on gala occasions, large tassels of ornamental feathers were fastened, while the rest of the hair, as it seems, stood out short and stiff all around the face. It is worn thus by the figures of warriors in the Mendoza codex (see *l*, figure 37) and on the head of Yacatecuhtli, the god of traveling merchants and caravan leaders, in the Sahagun manuscript of the Biblioteca del Palacio, *m*. This manner of wearing the hair was called temillotl, "stone-pillar hair dress", and the great tassels were called quetzallalpiloni, "ornamental feather band".[a] The name temillo, "wearing the stone-pillar hair dress (warrior's hair dress)", occurs frequently in the list of names from Uexotzinco (Manuscrit Mexicain number 3, Bibliothèque Nationale), already mentioned several times, and is represented there sometimes by the figure of a pillar, sometimes by a stone or a stone in a setting, or, finally, by a stone in connection with a head of dressed hair (see *n*, figure 37). In the other manner of wearing the hair it was made to stand up high over the forehead and allowed to hang down from the crown of the head over the neck, where it was wound by a strap, into which a feather ornament was stuck on gala occasions. This fashion is shown in the picture of a chieftain arrayed for the dance, *o*, which in Codices Telleriano-Remensis and Vaticanus A designates the feast Tecuilhuitl, and in the drawing of the head of Tlacochcalco yaotl in the Sahagun manuscript in the Biblioteca del Palacio, *p*. The chieftains of the Tlaxcaltecs are also drawn with this hair dress on the lienzo of Tlaxcala, in the representation of the festivities which the republic of Tlaxcala prepared for the reception of the conqueror Cortes, whom they hailed as their ally. This manner of wearing the hair was called tzotzocolli, and the feather ornament stuck into the strap, consisting of a furcated plume of heron feathers, was called aztaxelli.[b] In *q* I give a picture from the Sahagun manuscript in the Biblioteca del Palacio, in which warriors are represented executing a dance at the feast of Ochpaniztli, where these two modes of wearing the hair are to be seen side by side, distinctly drawn. The former, the temillotl, is the distinguishing mark of the actual chieftains, the tequiua. Motelchiuh, the great war chief, is therefore represented with it in division 3 of our manuscript (plate VII).

Finally, Tlacotzin, in division 5 (counting from the lower path), has neither the royal headband nor the chieftain's hair dress, but is represented simply with hair hanging straight down, without any insignia whatever. He was drawn without the royal headband, because at that time he was probably not yet in possession of the royal power which was afterwards conferred upon him. Nor was the warrior's hair dress appropriate to him, because the title ciuacouatl, which he bore, was apparently not a military one. I will mention, however, that above Tlacotzin, in division 6, there was painted a head with the royal headband like Quauhtemoc, but that this has been pasted over; that is, expunged.

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[a] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, p. 140.

[b] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, p. 166.

As for the hieroglyphs, there are two in division 5 with Tlacotzin, which, however, do not both refer to the name. The first one seems rather to express the title and the second the name of the man. The latter represents an implement, a sort of wooden shovel which was used to work the ground, but also served to shovel earth, lime, etc. (see *t* and *u*). The former is taken from the Mendoza codex. Above is the tool, below the basket (chiquiuitl), in which the earth, lime, etc., was transported, with the broad carrying strap (mecapalli) to be placed over the forehead. In *u*, taken from the Osuna codex, is shown the Mexican laborer using this tool, the name of which is uictli, or coauacatl. In our manuscript it serves to express the name Tlacotzin because it was the symbol of servitude or bondage, of slave labor. The serf, the slave, was called tlacohtli. A tlacotl, somewhat differently pronounced, with the vowel short in the first syllable, meant the blossoming bough, an example of which is depicted in the hieroglyph Tlacopan (Tacuba). As in the present case the name Tlacotzin is expressed by a tool, we may conclude that the first pronunciation (with the long a) and also the first meaning belonged to it.

The first hieroglyph shows the picture of a snake with open jaws holding a human face. The snake is painted yellow, excepting the rattles and belly, the human face brown, and on the cheek there seem to be traces of the two stripes which are almost invariably drawn in the hieroglyphs of the Mendoza codex when a female face is to be expressed (see *r*, figure 37, the hieroglyph Ciuatlan, from the Mendoza codex, volume 40, page 1). The first hieroglyph in division 5 is therefore the exact reproduction of the word ciuacouatl, "female snake", the title, which it is stated by Chimalpahin and in the Sahagun manuscript was borne by the Tlacotzin mentioned here. The title ciuacouatl belonged to the highest dignitary in the realm, who was in a certain sense the colleague or deputy of the king (tlahtouani). This fact is so often and emphatically repeated in Tezozomoc's Crónica mexicana that it is natural to suspect intention and to conclude that the power claimed by the ciuacouatl was not always recognized by the king. In general, the colleagueship was plainly and clearly enough established. When in the narrative of the deeds of the elder Moteculizoma, Tlacaelel, ciuacouatl of that period, makes a suggestion, Moteculizoma answers that he agrees to everything, "for indeed I am the master; but I can not order everything, and you, ciuacoatl, are as much master as I am; we must both govern the Mexican state". The name ciuacouatl has several meanings. It means "female snake", but it may also signify "female twin" or "female companion". The name probably refers to the ancient earth goddess, who, in different places, was called variously Ciuacoatl, "the snake woman", Tonantzin, "our dear mother", or Teteo innan, "mother of the gods", and who was to the father, the ancient god of heaven, exactly what the ciuacouatl was to the king in the earthly realm of the Mexican commonwealth.

I give in *s* a painting of this goddess corresponding exactly to the one in our hieroglyph. It occurs on plate 63 of the Goupil-Boban atlas, and there denotes Ciuacoatl, the goddess of Colhuacan, to whom Mexican prisoners are being sacrificed.

Motelchiuh means "the despised". The hieroglyph which here expresses this name is the well-known hieroglyph te-tl, "stone", which is painted in brown and black, to express the various colors or the veining of stone. Of course, this hieroglyph is only an approximation of the sound which it is actually intended to represent. It is not impossible that there is some etymologic connection, though only an indirect one, between the words te-tl, "stone", and tel-chiua, "to despise". Besides, Motelchiuh is designated also in the Sahagun manuscript of the Academica de la Historia in precisely the same way; that is, by the hieroglyph te-tl "stone" (*e*, figure 37).

Uanitzin, division 2, is hieroglyphically denoted by the flag (pamitl). p, b, and w are all kindred sounds, and our (German) w, or, more correctly, the English w, is the sound which the old grammarians intended to express by u or v, and the Jesuits by hu. It seems to be only an error when Chimalpahin occasionally writes Panitzin instead of Huanitzin; that is, Uanitzin. Uanitl is also denoted by a small flag in the Sahagun manuscript of the Academia de la Historia (*g*, figure 37).

Lastly, Oquiztli, in the first division above the lower path, is simply described by the hieroglyph of the city Azcapotzalco, whose ruler he was. Azcapotzalco means "in the place of the ant-hills". The city is therefore hieroglyphically expressed by the picture of an ant-hill (see *a* and *b*, the former taken from the Mendoza codex, the latter from a record preserved in the library of the Duke of Osuna). Here we see in the midst of small pebbles and grains of sand a creature, usually painted red and of a somewhat exaggerated shape, which is intended to represent an ant (azcatl).

I will now state briefly what is known concerning the subsequent fate of the four persons whom Chimalpahin mentions as companions of Quauhtemoc, the last free king of Mexico, and who in our manuscript are set down in due order underneath Quauhtemoc.

Tlacotzin seems to have been a grandson of Ahuitzotl, the eighth king of the Mexicans.[a] He was therefore a near relative of Quauhtemoc, who was a son of Ahuitzotl. This probably explains the high position as ciuacouatl, which he held with and under Quauhtemoc. He took a very energetic part in the defense of the city of Mexico, according to the Aztec account preserved in the Sahagun manuscript of the Biblioteca Lorenziana, which was probably written by an eyewitness who was shut up in the beleaguered city with him. Tlacotzin is mentioned there with tlillancalqui Petlauhtzin and uitznauatl Motelchiuhtzin, and these three, as leaders of the Tenochcas, are placed opposite tlacateccatl Temilotzin and tlacochcalcatl Coyoueuetzin, the leaders of the Tlatelolcas, the inhabitants of the sister city of Tenochtitlan. After the conquest he, too, was baptized, and was then called Don Juan Velásquez Tlacotzin. After the execution of Quauhtemoc and his companions at Ueymollan, Cortes made him King of Mexico (tlahtohuani mochiuh yn Tenochtitlan) and equipped him like a Spaniard, presenting him with a sword, a dagger, and a white horse.[a] Tlacotzin, however, was not destined to enter his native city as King. After having been absent for nearly three years with Cortes on the expedition to Honduras, which was one of hardships and privations, he died on the homeward journey, in 1526, at Nochiztlan.

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[a] See Anales de Chimalpahin, Seventh Relation, ed. Rémi Siméon, p. 266, where the yxhuiuhtzin inyn, "the grandson of the previous one", can hardly refer to anyone but the previously mentioned Ahuitzotl.

Of Motelchiuh it has already been stated that he was not a prince of the blood, but had won his rank by distinguishing himself in war. In the passage from Chimalpahin quoted above he is mentioned with the title calpixqui, " keeper of the royal stores ". This was the name given to the governors of subjugated provinces, whose chief duty it was to collect the tribute and convey it to the royal storehouses. In the Aztec account in the Sahagun manuscript he is called uitznauatl and mexicatl achcauhtli. The latter means simply " Mexican war chief ". The former is one of the many military titles which were in use among the Mexicans, the actual meaning of which has not yet been determined. They probably referred to a particular gens (calpulli) and to its temple. After the conquest of the city Motelchiuh was also baptized, like the other noble Mexicans, and was named for his godfather, Don Andrés de Tapia Motelchiuh. We also see Thapia Motelchiuh written in our manuscript. After Tlacotzin's death at Nochiztlan, Motelchiuh was appointed his successor, but, as he was not a prince of the blood, actual royal dignity, the title tlahtouani, could not be conferred on him. I feel convinced that Cortes took this opportunity to somewhat degrade the dignity. He is therefore merely mentioned as a war chief of Mexico (Zan quauhtlahtohuani omochiuh Tenuchtitlan), but we learn nothing of his activity in this capacity. He, too, ruled but a few years and died in the year 1530, during an expedition to the provinces of the northwest (Teo-culhuacan, the province of Jalisco), where he was serving in the Spanish army under Nuño de Guzmán. While bathing in the neighborhood of Aztatlan he was struck by the arrow of a Chichimec, a hostile Indian, and died of the wound.[a]

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[a] See Anales de Chimalpahin, Seventh Relation, ed. Rémi Siméon, p. 207.

Uanitzin was a nephew of the king Motecuhzoma. His father, whose name was Tezozomoctli Acolnauacatl, was an elder brother of Motecuhzoma. Motecuhzoma was eventually called to the throne as the successor of his father, Axayacatl, by the choice of those who had the appointing power. But, according to a passage of unusual ethnologic interest in the annals of Chimalpahin, Tezozomoctli inherited the dance yaociuacuicatl from Axayacatl, who bought it of the Tlailotlaque, a tribe of the Chalca, whose property it seems to have been. Uanitzin's mother belonged to the house of the princes of Ehcatepec, a place lying north of Mexico, at the northern base of the mountains of Guadalupe, near the lake of Xaltocan. In the year 1519, shortly before the arrival of the Spaniards, when Motecuhzoma had somewhat recovered from the extreme consternation into which he had been thrown by the first news of the appearance of the Spaniards, Uanitzin was installed by his uncle as ruler of Ecatepec, which belonged to him as his mother's heir. According to Chimalpahin, Uanitzin was at that time 20 years old. He seems to have taken no special part in the fighting during the siege. The Aztec account in the Sahagun manuscript of the Biblioteca Lorenziana does not mention him; but Chimalpahin states, as I have quoted above, that he was one of the Mexicans of high rank who were taken with Quauhtemoc as prisoners to Coyouacan. Cortes had so much regard for his descent (or for his youth?) that he did not have him put in chains like the others. After the princes were released from prison his mother immediately took him with her to Ehcatepec; as Chimalpahin says, she concealed him there (ca ompa quitlatito yn inantzin Ehcatepec), and the people of Ehcatepec recognized him as their king (ynic ompa quintlahtocatlallique no yehuantin Ehcatepeca). As a Christian he bore the name of Don Diego de Alvarado Uanitzin.

After Motelchiuh's death in the year 1530 the throne of Mexico was for a time unoccupied. After the return from Teocolhuacan, which occurred in 1532, the office of chieftain was conferred on a certain Xochiquentzin, who also was not a prince of the blood (ynin ça no Mexica amo pilli), but had only been a large landowner (yece huel chane catca Mexico) and had held the office of a calpixqui, "a keeper of the royal stores" under the old kings. His house was in Calpul Teopan, the southeastern quarter of the city of Mexico, called already at that time the barrio of San Pablo. Xochiquentzin died, however, in the year 1536. The viceroy, Don Antonio de Mendoza, who had arrived in Mexico the year before, at first hesitated to fill the post again; but, in pursuance of his efforts to regulate the relations between the natives and the Spaniards, he found it advisable again to give a chief to the Indian population of the capital. In the year 1538 he appointed to the office Uanitzin, who, however, was not proclaimed king (tlahtohuani), nor could he be quauhtlahtouani, "war chief", on account of his rank; therefore he was installed in office under the Spanish title of "gobernador". He died as early as 1541. One of his sons, Don Cristóval de Guzmán Cecetzin, or Cecepaticatzin, was afterward, in 1559, the third gobernador of Mexico.

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[a] Chimalpahin, pp. 209, 222, 266.

Finally, regarding Oquiztli, the fourth person, set down in our manuscript underneath Quauhtemoc, we know from Tezozomoc's Crónica that he was installed as king at Azcapotzalco at the same time as Uanitzin at Ecatepec. Tezozomoc also designates him as a nephew of Motecuhzoma; but I have no positive information as to who his parents were. Azcapotzalco had become subject to the Mexicans since 1429, when the old rulers were driven out and the land was divided.[a] Oquiztli also seems to have taken no conspicuous part in the fighting during the siege. He was forced, with the other noble Mexicans, to accompany Cortes on his expedition into the forest regions of Chiapas and Honduras, and died there soon after the execution of Quauhtemoc, in the year 1542.[b]

So much concerning these four. Of the other persons set down in our manuscript from the ninth division upward, only the one entered in division 16 (counting from the lower path) is better known. This, as the explanatory note tells us, is Don Diego de San Francisco Teuetzquititzin, the son of Tezcatlpopocatzin, who again was a son of Tizocicatzin, seventh king of Mexico, and lived subject to Spanish rule in Calpul Teopan, the barrio of San Pablo of Tenochtitlan. He was appointed gobernador of Mexico after Uanitzin's death, in 1541, and died there in the year 1554.[c] The name Teuetzquiti means "the jester", "he who makes others laugh". The hieroglyph in our manuscript seems intended to represent a kind of comic mask. Elsewhere in the Sahagun manuscript of the Academia de la Historia, he is represented by an open mouth, *h*, and a namesake of his, Tetlaueuetzquititzin, who belonged to the royal family of Tetzcoco, and was gobernador of Tetzcoco at about the same time, is represented by an open mouth with the little tongue (*k*, figure 37), indicative of speech, before it. The head, behind which the hieroglyph in our manuscript is placed, is drawn with the royal headband of turquoise mosiac, as in the cases of Motecuhzoma, Quauhtemoc, Uanitzin, and Oquiztzin. Like them, Teuetzquitizin belonged to the royal family of Mexico.

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[a] Chimalpahin, p. 99.

[b] Chimalpahin, p. 207.

[c] Chimalpahin, pp. 241, 250; Sahagun manuscript, Academia de la Historia.

Of the other persons, I will first mention the one in division 7 (plate VII), counting from the lower path, besides Quauhtemoc, whom the explanatory note calls Don Martín Cortés Nezahual tecolotzin. The name is not known to me from other sources. The head is drawn with the hair hanging straight down, without the chieftain's hair dress and the royal headband; but above the head is the royal headband of turquoise mosiac. This is the well-known symbol used in the Mendoza codex for the office of tlacatecatl (see *a*, figure 38, page 17, of the Mendoza codex). The hieroglyph behind the head corresponds exactly to the name Nezahual tecolotl, which means

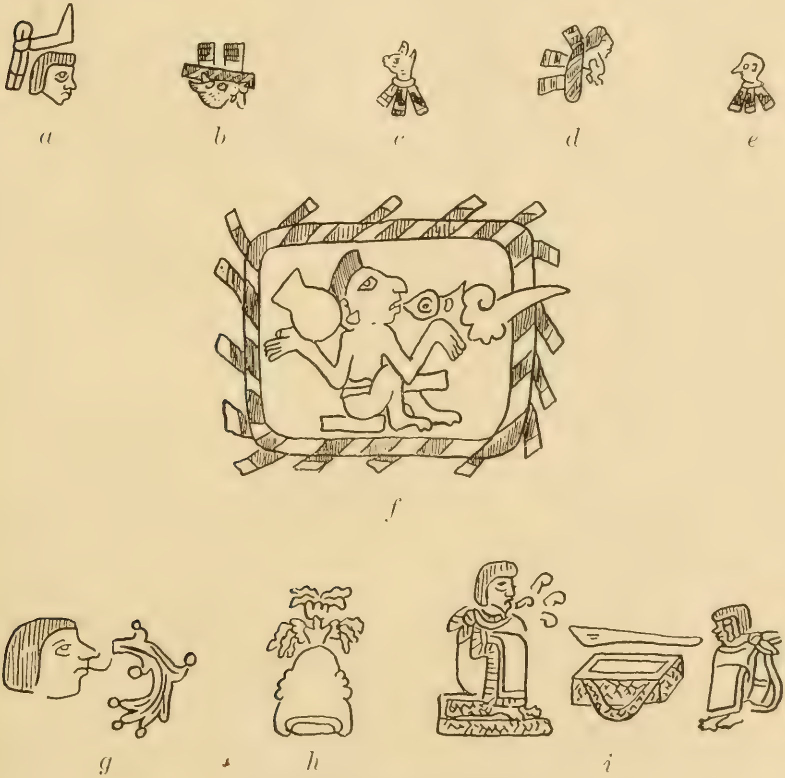

FIG. 38. Symbols of names.

"fasting owl", for the back part of the hieroglyph shows plainly the face of an owl, and the front part a ribbon, woven of many-colored strips, with ends standing out, which is a familiar and universally understood symbol for nezahualli "fasting" (see the hieroglyphs of Nezahualcoyotl, "the fasting coyote", *b* and *c*, same figure, and Nezahualpilli, "the fasting prince" or "the fasting child", *d* and *e*). Those marked *b* and *d* are taken from the Codex Telleriano-Remensis and *c* and *e* from the Sahagun manuscript of the Academia de la Historia. The symbol was derived from the custom of shutting oneself up for the purpose of fasting. When seclusion was not actually accomplished, it seems to have been indicated by a ring plaited of the stalks of the aztapilin, or aztopillin, a variety of rush of a whitish color below and green above (see *f*, taken from the Borgian codex, which represents the fasting person blowing the conch and carrying a water jug on his shoulder within an inclosure plaited of green and white strips). In parallel passages of the Borgian codex and Codex Vaticanus B a man is drawn, inclosed in a chest, waving the thorn of castigation in one hand and the green acxoyatl bush in the other. In corresponding passages of the Codices Telleriano-Remensis and Vaticanus A Quetzalcoatl, the god who was considered the inventor of castigation, appears armed in similar fashion in a boxlike inclosure, consisting of two parts.

A head follows in division 9 (plate VII), which, like that of Motelchiuh in division 3, wears the chieftain's hair dress (temillotl). The explanatory note calls this Anauacatzin, that is, " from the land by the water ", " from the seacoast ".[a] This name is hieroglyphically represented here by a circle (island?) surrounded by water. In the list of names of persons (Manuscrit Mexicain number 3, Bibliothèque Nationale), already frequently quoted, Anauacatl occurs as the name of a citizen of Almoyauacan and is expressed by *g*, that is, by a stream of water which is depicted before the mouth of a person, after the fashion of the little tongue which signifies speech. For atl is water and nahuatl clear, or intelligible, speech. I am unable to say where the Anauacatl of our manuscript belongs.

In division 10 follows a head with hair hanging straight down, which is designated in the accompanying note as Xaxaqualtzin. Xaqualoua means " to rub ", and this action is represented in the hieroglyph by two hands using a sort of scouring brush.

In the next division, 11, is another head with the chieftain's hair dress (temillotl). The explanatory note calls it Cuetlachivitzin, " wolf's feather ", and this is expressed in the hieroglyph by the head of a wolf with tufts of down. In Chimalpahin's annals a Cuetlachiuitzin is mentioned who was installed as ruler of Tequanipan in 1561, and who died in 1572, but I am unable to say whether this is the one referred to in our manuscript. I do not think it at all probable, as there is nowhere in our manuscript an allusion to the region of the Chalcas.

In division 12 we have another head with hair hanging straight down. The note calls it uitznauatl, which is expressed in the hieroglyph by the thorny point of an agave leaf (uitztli, " thorn ") and the small tongue of speech in front of it (nauatl, " clear speech ").

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[a] I have shown in the comptes rendus of the eighth session of the Congrès International des Américanistes, Paris, 1890, pp. 586, 587, that the word Anauac means the seacoast, and that it is absurd to speak of the plateau of Anahuac.

The thorn, the sharp point of the agave leaf, is divided by an oblique line, and one half is painted red, to indicate that it is covered with blood. These thorny points of the agave leaf were used in religious self-castigations, and, as we frequently see on the last pages of the Mendoza codex, also largely for purposes of punishment and educational discipline. The word uitznauatl was a title, which in Mexico and elsewhere was connected with a certain military or political office. We saw above that Motelchiuh bore this title. The plural, uitznaua, denoted a class of evil spirits, which were conquered and destroyed by Uitzilopochtli, and uitznauac, or uitznauatlampa, is the region of the south.

In division 13 we have again a head with hair hanging straight down. The note says uaxtepecatl petlacalcatl. The first name means " one from Uaxtepec " (from the place of the uaxin, Acacia esculenta). Uaxtepec was a place in the district of Cuernavaca, therefore in a temperate region (" tierra templada "). Here was the Jardin d'Acclimation of the kings of Mexico; that is, they transplanted hither such trees and plants from the tierra caliente as seemed to them interesting, and came themselves for rest and recreation. The place is hieroglyphically represented by *h*, figure 38, that is, by a mountain and a tree from whose branches hang the long knobby acacia pods (usually painted red). Petlacalcatl means " the steward of the mat house ". This was a kind of public storehouse, where were kept mats and other articles of furniture which were used when foreign royal guests came. The petlacalcatl directed the public works, as shown in *i* taken from the Mendoza codex, page 71. Here the petlacalatl is represented on the left, with many little tongues before his mouth, to express the admonitions which he bestows upon those commanded to do the work. In the middle are the basket and the tool (uictli, or coauacatl), with which we are already acquainted, and to the right crouches the weeping youth commanded to do the work. The hieroglyph behind the man's head in division 13 of our manuscript (plate VII) refers to this function of the petlacalcatl, and represents the above-mentioned implement, which we have already met with as the hieroglyphic expression of tlacohtli. The first word in the accompanying note, " uaxtepecatl ", is not expressed in the hieroglyph. I know of no person by this name. It is probable that " uaxtepecatl " does not stand here for the name of a person, but denotes the district to which the official belonged. We often find the governors of provinces mentioned by the adjective form of their district instead of by their proper name—Cuetlaxtecatl, " the governor of Cuetlaxtlan ", etc. So here, too, uaxtepecatl petlacalcatl may mean merely " the keeper of the stores. the steward of the district of Uaxtepec ".

Between divisions 13 and 14 in our manuscript there is a lesser stream of water, which, as I have said, leads straight across the page, from the path on the right to the water on the left. Then follows above, in division 14, a head with hair hanging straight down, in the explanatory note of which some of the letters are destroyed and made unintelligible by a dark stain; but the hieroglyph behind the head informs us that the note must be read Itzpotoncatzin; that is, “He who is stuck over with obsidian knives instead of with feathers”. The hieroglyph shows us a stone knife (iztli, “knife”, “obsidian”) with tufts of down sticking to it (potonqui, “stuck over with feathers”). Feathers fastened to the hair and naked skin were part of the holiday dress. Young girls adorned themselves for a festival by sticking red feathers to their arms and legs, and because this sticking on of feathers was part of the holiday dress the victim of sacrifice was similarly adorned, except that white feathers were used, to show that he was doomed to death. Those intended for the sacrificio gladiatorio, in particular, were smeared with white infusorial earth (tizatl) and stuck over with white down (iuitl) *a*, figure 39. To send tizatl and iuitl was therefore a declaration of war. The opponent was thus symbolically doomed to a sacrificial death. Hence in Codex Telleriano-Remensis the conquest of a city is invariably represented by the picture of a man painted white, with dots, and covered with tufts of down (*b*, figure 39), and in the Mendoza codex, page 47, we see the declaration of war against an insubordinate cacique

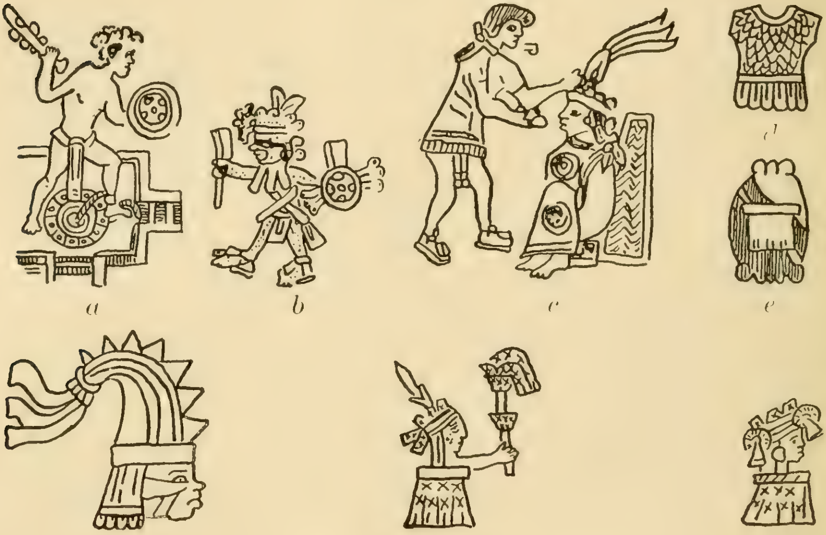

FIG. 39. Symbols from Mexican codices.

also represented in this way, *c*. The envoy of the king while he delivers his message is sticking feather tufts upon the head of the cacique, who sits in his chair clothed in a rich mantle. Another brings him the shield, which was also part of the equipment of those destined for the sacrificio gladiatorio.

In the next division, 15 (plate VII), we have a head with hair hanging straight down, which is called Ixeuatzin in the accompanying note. Ix-tli means " face ", " front ", " presence ", " eye "; euatl means " the skin ", and was also used especially to denote the gala doublets, made of feather work which were worn by Mexican warriors of rank over the wadded armor, ichca-uipilli, which served for the actual protection of their bodies. In *d*, figure 39, I have reproduced one of these military doublets of feather work which is used in the Mendoza codex, pages 40 to 49, as a hieroglyph for the city of Cozouipilecan " where the people wear military doublets of yellow feathers ". A true euatl, that is, the skin flayed from a man (tlacaeuatl), is worn by the god Xipe, " the flayed one ", the red god of the Yopi and Tlapaneca. The hieroglyph in division 15 of our manuscript (plate VII), corresponding to the meaning given here for the name, is an eye (ixtli) ; above and below it is a shirt, as shown in *d*, figure 39, but having hands hanging from it and with a gash straight across the breast and a few stains below. It is evident that this drawing is not meant to represent a feather shirt, but a genuine human skin, such as Xipe wore. The opening straight across the breast indicates the incision which was made to tear out the victim's heart, and the stains are for blood stains. This is still more clear in the kindred hieroglyph in division 24 (plate VII), where the red stains—blood stains on a yellow ground, which indicates the death hue of a human skin—are plainly to be recognized.

After division 15 comes division 16, with the head and hieroglyph of Don Diego de San Francisco Teuetzquititzin, of which I have already spoken.

In division 17 is another head having the chieftain's hair dress, temillotl. The note says coua-yvitzin, " snake-feather ", and this is represented in the hieroglyph by a snake covered with tufts of down. The name Coua-iuitl is mentioned in the annals of Chimalpahin. Chimalpahin tells us there that after the surrender of the city the above-mentioned five princes of Mexico were taken captive to Coyouacan, and then adds: yhuan teohua Quauhcohuatl yhuan Cohuayhuitl Tecohuatzin Tetlanmecatl quintemolli (" and they sought for the priest Quauhcoatl and for Couaiuitl Tecouatzin, Tetlanmecatl "). It is not impossible that the Couaiuitl mentioned here, concerning whom I know no further particulars, is also the one referred to in our manuscript.

In division 18 is a head with hair hanging straight down, which, according to the marginal note, bears the name Imexayacatzin. The hieroglyph is a human leg, upon the thigh of which is painted a face. This exactly reproduces the meaning of the name. Xayacatl means "the face", and imexayacatl is literally imex-xayacatl, which is derived, with syncopation of the final consonant of the first word, from imetzxayacatl, that is, "the face made of her thigh (metz-tli)". The name refers to a ceremony which was performed at the broom feast, Ochpaniztli, the feast of the goddess Teteo-innan, or Toci. A woman was sacrificed at this feast, who, as was customary at the feasts of the Mexicans, was considered an image of the divinity in whose honor the feast was held, and who represented this deity in dress and action. This woman was sacrificed by decapitation, a priest holding her on his back, and was then immediately flayed. A priest dressed himself in the skin, and represented the goddess during the remainder of the feast. From the skin of the thigh a mask was made, which was called mexayacatl, or more correctly i-mex-xayacatl, "the face made of her thigh". It was worn, together with a peculiar headdress, which was called itztlacoliuhqui, "the sharply curved", particularly described in the respective chapter of Sahagun (volume 2, chapter 30). It was considered the symbol of coldness and hardness, of infatuation, of evil, and of sin. I reproduce this mask and headdress, *f*, from the Sahagun manuscript of the Academia de la Historia, where the two combined are depicted as the insignia of a warrior, under the name mexayacatl. The mask (mexayacatl) and the headdress (itztlacoliuhqui) were put on by Cinteotl, the god of the maize plant, or more exactly of the ripe, hard, dry ear of corn, which was called cintli, who was the son of the old earth mother, Teteoinnan, and a battle then ensued between him and his followers on the one hand, and the priest clad in the human skin, representing the goddess, on the other, which was undoubtedly meant to symbolize the driving away of frost and other harmful things which threaten the Indian corn. These harmful things were supposed to be conjured into the mexayacatl. Therefore at the close of the feast a chosen band of warriors carried it at a running pace somewhere across the borders into hostile country.[a]

In the next division, 19, the note gives the name xipanoctzin. This should really read xip-panoc-tzin, derived by assimilation from xiuh-panoc-tzin, just as xip-palli, "color turquesado", is derived from xiuh-palli. Accordingly, the name contains the elements xiuh (or, with the article, xiuitl); "turquoise", and panoc, "he who crosses a river" (from pano, "to cross a river"). Both elements are clearly expressed in the hieroglyph. Xiuh is expressed by the hieroglyph for turquoise (see *l*, figure 34) and "crossing the river" by the boat which is drawn below it.

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[a] Sahagun, v. 2, chap. 30.

In division 20 (plate VII) the note is again rendered quite illegible by the crease in the page, but I think that I can distinctly make out Tepotzitotzin. The name contains the elements tepotz-tli, "hump-back", and itoa, "to speak". Hence the hieroglyph shows a human body with a curved back and beside it the little tongue, the symbol of speech.

In the next division, 21, the note is somewhat illegible, owing to an attempted correction. I think I can make out yaotequacuiltzin, which might be translated "the old priest of Yaotl, i. e., Tezcatlipoca". There is no hieroglyph.

In division 22 the explanatory note reads aca-zayol-tzin, that is, "reed gnat". The hieroglyph is the picture of the reed (acatl) and, above it, of a gnat (zayolin), painted brown.

In division 23 we read Amaquemetzin, "he who wears a garment of bark paper". By quemitl, "garment", the Mexicans meant a kind of covering usually made of more or less costly feathers, which was tied around the neck of idols and hung down in front, and was therefore commonly called by the Spaniards "delantal". Amatl is the inner bark of a variety of fig, which was much used in ancient Mexico, especially as a cheap adornment for idols. Amaqueme, "dressed in a garment of bark paper", was the name of the idol on the mountain near Amaquemecan, in the territory of the Chalca, which, Christianized and called Monte Sacro, is still held in great veneration by the inhabitants of all the neighboring valleys, pilgrimages being made to it from great distances. The hieroglyph in division 23 shows the form of the quemitl usual in the manuscripts (see *e*, figure 39, the hieroglyph of Tequemecan, and also *e*, figure 35, the hieroglyph of Aztaquemecan), but it is blank and unpainted save for a few black designs, which were probably made with drops of hot liquid caoutchouc. Similar paper quemitl with caoutchouc-drop markings played an important part in the worship of the mountain gods at least. With them were decked the little idols of the mountain gods, the Eecatotontin, which were made during the Tepeilhuitl, the feast of the mountain gods (see *g* and *h*, figure 39, the figures of the mountains Popocatepetl and Matlalcueye, from the Sahagun manuscript of the Biblioteca del Palacio). I will mention, by the way, that Kingsborough's artist has erroneously colored this hieroglyph red and yellow, though it must be and is colorless.

In division 24 (plate VII) the explanatory note gives the name euatlatitzin, that is, "he who hides the skin". An euatl, a doublet made of a human skin, forms the hieroglyph, like the one in division 15. The name eua-tlati-tzin probably refers to the ceremony which was performed at the close of Tlacaxipeualiztli, the feast of the god Xipe, when those who for 20 days had worn the skins of the sacrificed victims, out of special devotion to Xipe, carried them in solemn procession to a certain place in Xipe's temple. This was called eua-tlati-lo, "the hiding or putting away of the skins".

The twenty-fifth square is blank. In the twenty-sixth square a head is drawn which the writing above it calls Teilpitzin, that is, "he who binds people". The hieroglyph shows a rope tied in a knot, a sufficiently intelligible symbol.

This ends the list. Few familiar names are mentioned, as we see, and these belong to about the same period. They are all the direct successors of Motecuhzoma, excepting the first one, Cuitlauatzin (*c*, figure 37), who, it is well known, died of smallpox after reigning a few weeks, and who, excepting the last two gobernadores, Cecepatitzin, who succeeded Teuetzquititzin, and his successor, Nanacacipactzin, were the last of the ancient royal family to exercise any kind of royal authority. It therefore seems as though our fragment treated of territory which was a royal demesne, but which after Motecuhzoma's death probably did not pass as a whole to his successors, but was in part divided with others.

It is my opinion that this manuscript formed a part of the collection brought together by Boturini, and that it is described as number 8, section 8, in his Museo Indiano. Boturini there gives the following description: Otro mapa en papel indiano, donde se pintan, al parecer y por lo que se puede decir ahora, unas tierras solariegas de señores, empezando de dicho Emperador Moteuchzúma, y siguiendo á otros hasta los tiempos de la cristiandad ("Another map on Indian paper, where are painted, apparently and so far as can be said now, lands belonging to different lords, beginning with the said Emperor Moteuchzúma, and afterward to others down to the times of Christianity").

FRAGMENTS III AND IV

These (plates VIII and IX) are two fragments of a larger manuscript, which belonged to the collection of the Cavaliere Boturini. In the inventory of the collection made after Boturini's imprisonment it is described in the fourth list, under number 26, in the following words: Un mapa grande, papel de maguey gordo con pinturas toscas, muy maltratado; trata de las cosas de la conquista de Cuanmaná y otros lugares, de los Españoles, con unos rios de sangre, que indican las batallas crueles que hubo de los Indios ("A large map on coarse aloe paper, with rude paintings, in very bad condition, treats of events during the conquest of Cuanmaná and other places by the Spanish, with rivers of blood, which indicates the cruel battles which they waged with the Indians").[a] Boturini himself describes it as

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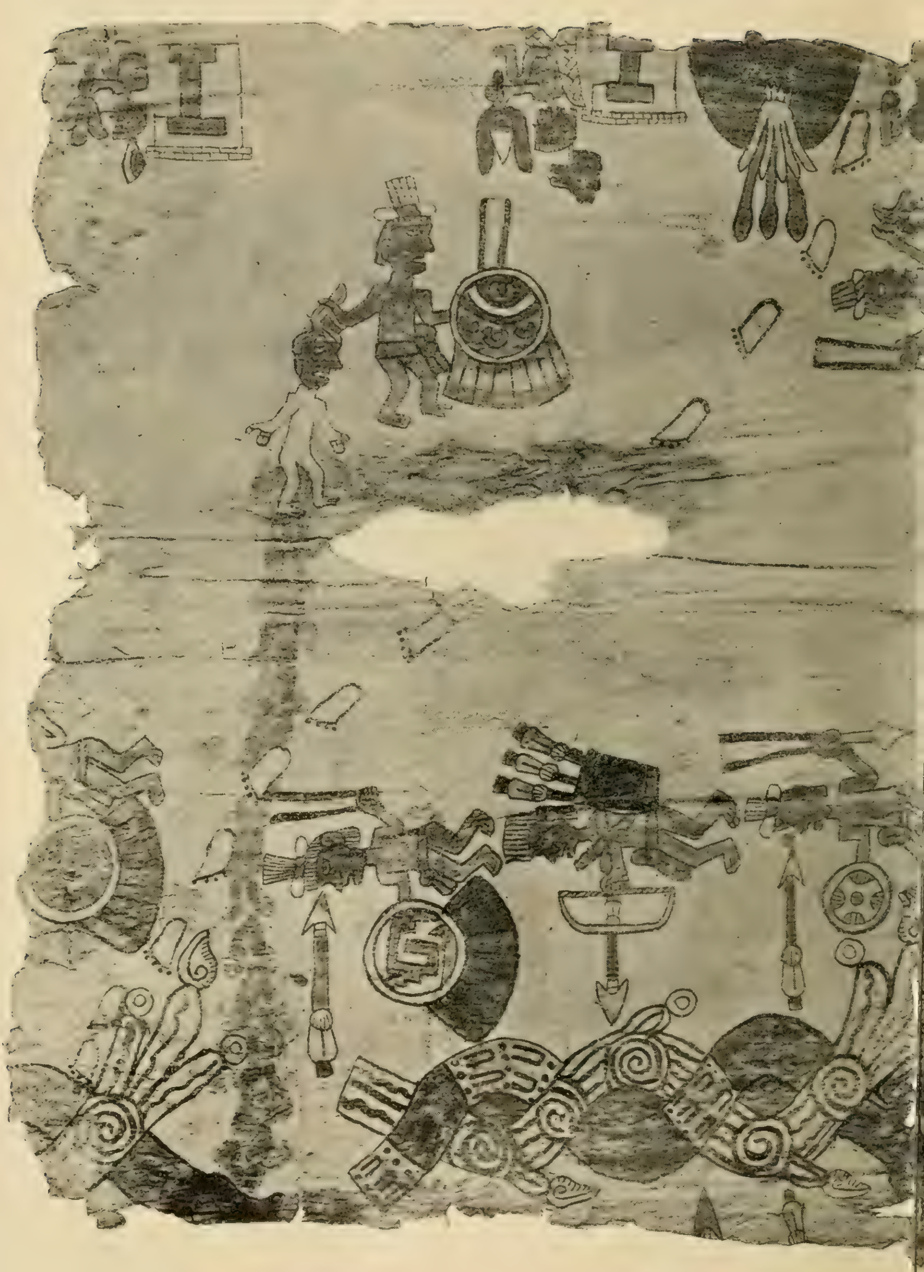
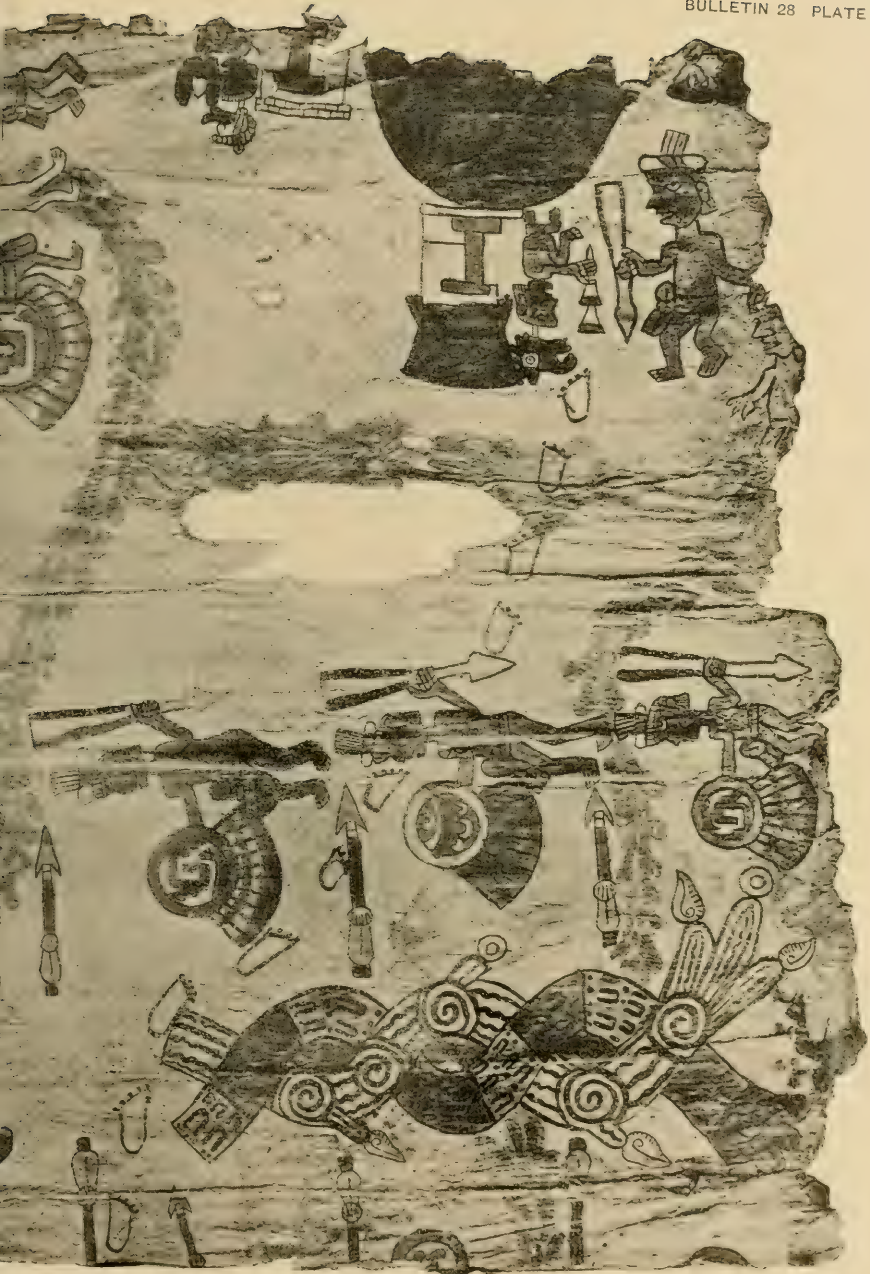
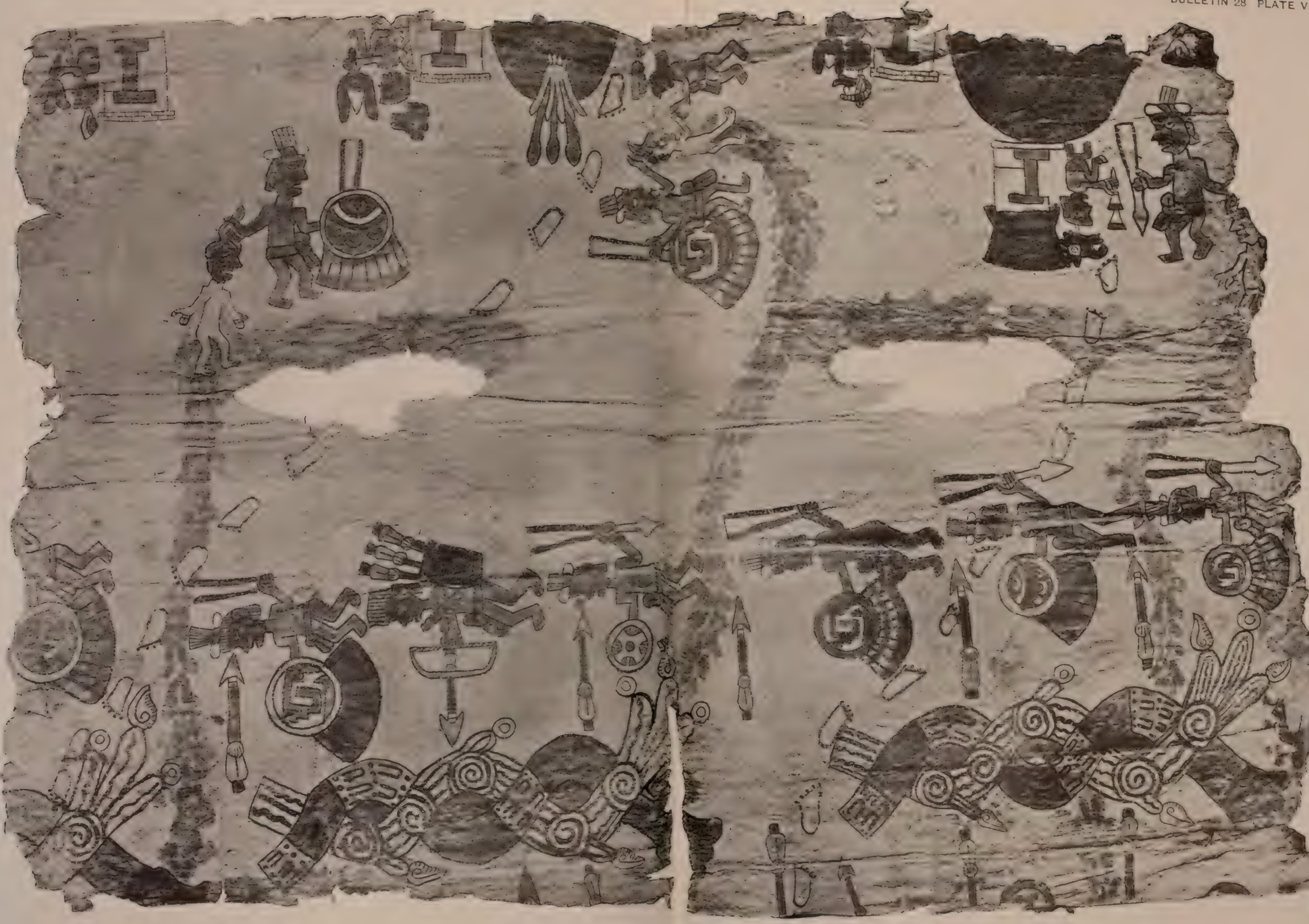
[a] Peñafiel, Monumentos del arte mexicano. Text, p. 61.



MEXICAN PAINTING—HU



OT FRAGMENT III



MEXICAN PAINTING—HUMBOLDT FRAGMENT III

number 2, section 20, in the Catálogo del Museo Indiano del Cavallero Boturini, somewhat more in detail. He says there: Otro mapa muy grande de una pieza, y maltratado á los dos lados, de papel grueso indiano. Tiene de largo algo mas de ocho varas, y de ancho dos varas y quarta, y trata con toscas pinturas de las crueles guerras de la gentilidad entre diferentes pueblos, cuyos nombres son Hecatèpec, Huyatèpec, Amoltèpec, Nièntlah, Tzatzaquàlan, Hueymètlan, Coltèpec, Antlacaltèpec, Tepechàlla, Xiquipìlco, Achàlalan, Zayutèpec, Teconhùac, Totolhuitzècan, Yahueyòcan, Zacatzòlah, Mazapìla, y despues de haver demonstrado con unos rios de sangre, assi lo cruento de la guerra, como de los prisioneros sacrificados, apunta la llegada del gran Cortes, y de los Padres de San Francisco en Quauhmánco, etc. ("Another map, very large, in one piece, in bad condition at both sides, on thick Indian paper. It is some 8 ells long and 2¼ ells wide, and treats in rude paintings of the cruel wars of the gentry with various tribes, whose names are Hecatèpec, Huyatèpec, Amoltèpec, Nièntlah, Tzatzaquàlan, Hueymètlan, Coltèpec, Antlacaltèpec, Tepechàlla, Xiquipìlco, Achàlalan, Zayutèpec, Teconhùac, Totolhuitzècan, Yahueyòcan, Zacatzòtlah, Mazapìla, and after having shown by rivers of blood both the cruel nature of the war and the prisoners who were sacrificed, it relates to the coming of the great Cortes and of the Franciscan fathers to Quauhmánco, etc.")[a]

That these descriptions refer to the manuscript of which fragments III (plate VIII) and IV (plate IX) of the present collection are parts follows from the general characterization of the manuscript and from the reference to the rivers of blood (rios de sangre), which are indeed very conspicuous on our page; unfortunately, they are not as obvious in the uncolored photographic reproduction. This is clearly proved by the fact that three of the names of places mentioned by Boturini are actually mentioned in the explanatory notes of our fragment III. The last three places mentioned by Boturini, Yahuayòhca, Zacateotlah, and Mazapillah (I read the names thus), are the ones that occur on the fragment. Our fragment must belong to one of the original lateral margins of the manuscript. The missing pieces, which must be very considerable, since in Boturini's time the whole measured 8 ells in length and 2¼ ells in width, are extant elsewhere, whether intact or not I can not say. The Museo Nacional de México possesses large portions of them. I saw copies of them last year in the Mexican department of the American historical exhibition at Madrid, and other parts—as it seems, very important ones, taken from what was originally the middle—I saw years ago in the Biblioteca Nacional in Mexico.

Boturini states that there had been in his possession a second, similar manuscript, on which, among others, were the place names Tonalxochitlan, Quauhtèpan, Ynenechcòyan, Tepeyahuàlco, Ohocòtlan, Tlilàlpan, and Ameyalàto on the one side; and on the other, Huixocotèpec, —— Huecoyòtzi, —— Coyòcan, Quetzalcohuàpan, Tlacòtlan, —— Atlan, Quimichòcan, —— Chipetzinco, Quanápa, —— Tepeyahuàlco, Yxtlahuàca, Ocotzoquaùhtla. This and the first manuscript were found together—enterrados en una caxa baxo las ruinas de la antigua ermita de la jurisdiccion de Huamàntla, Provincia de Tlaxcàllan, y de alli los hice sacar ("buried in a box beneath the ruins of the ancient monastery in the district of Huamàntla, province of Tlaxcàllan, and from there I had them taken")—and he adds: "Y solo se pueden interpretar en un todo, en occasion que se consulten los manuscritos de la Historia general ("and they can only be interpreted as a whole, whenever the manuscripts of the general history are consulted").

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[a] Idea de una nueva historia general de la América septentrional. App., pp. 38, 39.

This information is very important, because the region from which fragments III and IV of our collection came is thus definitely fixed. The place called "Quauhmanco" in Boturini's description of the leaf and "Cuanmana" in the inventory is undoubtedly Huamàntla, situated in the province of Tlaxcàllan, at the northeast base of the Cerro de la Malinche (the mountain called in ancient times after the goddess Matlalcueye), in the neighborhood of which Boturini found the two remarkable manuscripts. Huamàntla doubtless stands for Quamantla, which, in turn, is derived by contraction from Quauh-mantlan. In fact, there are still extant in that region many of the names which Boturini mentions as occurring on these two charts. I can not, it is true, accurately define the position of the three several places whose names occur on fragment III (plate VIII), but it is beyond a doubt that they were in the same region.

As for the representations on these pages, the portions belonging originally to the middle must be distinguished from those belonging to the borders. The principal part of the left side of fragment III (plate VIII) belongs to the part which was originally the middle. Here we see, first, surrounded by flying spears and fighting warriors, a curious design in which a stream of water, painted blue, with drawings of currents and whirlpools and with the usual snail shells on the branches, is intertwined with a band winding in a similar manner and frayed at the ends, composed of alternate sections of gray with dark figures and yellow with red figures. The alternate dark sections and light yellow sections with red figures denote fire, and the entire symbol is nothing more than the pictorial hieroglyphic expression for the well-known phrase atl tlachinolli, or teoatl tlachinolli, which may be understood as meaning literally "water and fire", although its original meaning was probably something else, and which is generally used in the sense of "war". The same symbol, somewhat differently drawn (see *a*, figure 40), may be seen in the headdress of the god Camaxtli, the war god of the Tlaxcaltecs, who is opposite the fire god, the ruler of the ninth week, which begins with ce Coatl, on page 9 of the Tonalamatl in the Aubin-Goupil collection. I have shown that the tonalamatl occurs in the most diverse Mexican picture writings with the same regents and essentially the same symbols or symbols derived from the same idea.[a] If we take the Borgian codex, for instance, we find here, too, the fire god depicted as the ruler of the ninth week, ce Coatl. But opposite him we have not the effigy of Camaxtli, the war god of Tlaxcala, but a design (*b*, figure 40) in which we clearly recognize, besides a scorpion and flying arrows, the stream of water and the ascending smoke of fire. In another parallel passage in the same manuscript there is again drawn opposite the fire god, instead of the war god, merely a scorpion, a stream of water, and a burning house, *c*, teoatl tlachinolli, the symbol of war.

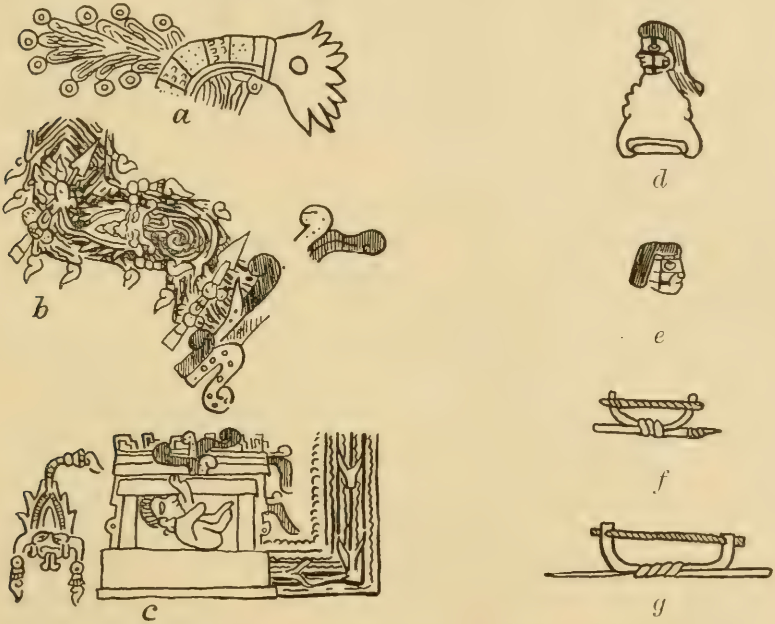

FIG. 40. Symbols and figures from the Mexican codices.

The bodies of the warriors on our fragment (plate VIII), to the right of the teoatl tlachinolli, the symbol of war, are painted brown and the faces yellow, like the other figures on this fragment. Moreover, all the warriors have a characteristic red face painting, which consists of one vertical stripe and two horizontal stripes. This painting undoubtedly has some special ethnic significance. At least it differs from the painting customary among the Mexican warriors, who, as we learn from Sahagun, app. 3, chapter 5, and as we see represented throughout the Mendoza codex, colored the whole body black except the face, and this they painted with a few black stripes, on which they sprinkled powdered iron pyrites—niman mìchio, mitoaya motliltzotia, hapetztli ic conpotonia ininechival. " Y en la cara se ponían ciertas rayas con tinta y margagita ".[a] On the other hand, I find face painting like that of the warriors of our fragment III (plate VIII) on the head set upon a mountain, which is given in the Mendoza codex as the hieroglyph of the city of Otompan, " in the district of the Otomís ", *d* (figure 40), as well as in a drawing, *e*, which, in the list of names of persons of Uexotzinco (Manuscrit Mexicain number 3, Bibliothèque Nationale), denotes a man named Chichimeca. We know that the name Chichimeca was borne as an honorary title by the rulers of Tetzcoco and, especially, by the Tlaxcaltecs. Red and yellow painting is mentioned as occurring among the Mexicans, but it was not a mark of distinction regularly conferred by official consent, as I would emphasize in controversion of some recent statements, but a symbolic ceremony, performed but once, by which it was publicly made known that a warrior had taken a prisoner alone, without help from others. This painting, which consisted in coloring the body and temples yellow and the face red, was applied to the fortunate warrior in the presence of the king by the calpixque, the governors of the provinces, and the commanders of divisions of troops stationed at a distance, the recipient being afterward rewarded by the king. It is exactly the same decoration as the one worn by those who sacrificed a prisoner by fire at the feast Xocotl-uetzi in honor of the fire god. I have spoken elsewhere of the meaning of this manner of painting the face, which is really that of the goddess Ciuacouatl, or Quilaztli (see Ausland, 1891, page 865).

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[a] Über den Codex Borgia und die verwandten aztekischen Bilderschriften.

Beside atl tlachinolli, the symbol of war, we have six warrior figures and the lower half of a seventh in our fragment III (plate VIII). Five of them wear the warrior's hair dress (temillotl) (see *l* and *m*, figure 37, and the heads in divisions 3, 9, 11, and 17, counting from the lower path, on fragment II (plate VII) of this collection). All these are armed with the shield (chimalli) and the club (maquauitl), which has an edge of obsidian splinters on both sides.[b] So, too, the three warriors drawn on the right side of the fragment have the temillotl and are armed with shield and maquauitl. Only one warrior in the left-hand row, the fifth from below, has the other style of hair dress, which I described above as tzotzocolli, and which is illustrated by *o*,

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[a] Zeitschrift für Ethnologie, 1887, v. 21, p. 175 and following, "das Tonalamatl der Aubinschen Sammlung". Compte rendu, seventh session, Congrès International des Américanistes, Berlin, 1888, pp. 521–523.

[b] See also the pictures of Mexican warriors' ornaments, *m, p,* and *q,* fig. 37.

p, *q*, figure 37. This warrior is not armed with shield and club, but with arrow (mitl), bow (tlauitolli), and quiver (mi-comitl). The different mode of wearing the hair may be due merely to difference of rank, for the hair dress (temillotl), was the distinguishing mark of the tequiua, the great war chieftains. Still I think that there is also an ethnic difference apparent here. The maquauitl was the national weapon of the Mexican tribes, that is, of the inhabitants of the valley of Mexico and those who spoke their language. Besides this the spear (tlacochtli, tlatzontectli), thrown with the spear thrower (atlatl), was also used as an effective weapon. On the other hand, bow, arrow, and quiver were the weapons of the mountain tribes, the Chichimecs. The name Chichimecatl is reproduced in the Boturini codex and elsewhere simply by the picture of a bow and arrow (*f* and *g*, figure 40). The word Chichimecatl includes a multitude of very different tribes, speaking different languages. In the vicinity of the highlands of Mexico, and also in the district referred to on our fragment, that is, the region lying east and north of Tlaxcala, the only mountain tribe of importance is the Otomi. It is a remarkable fact that this very tribe wore the hair in a mode most closely resembling that which I have described above as tzotzocolli, which may be seen worn by the fifth figure from below in the left-hand row on our fragment. The Otomi, says Sahagun (volume 10, chapter 29), shaved the hair on the forehead and let it grow very long at the back of the head. This hair hanging down long behind was called piochtli. At the gates of Tlaxcallan, as we know from Gomara, Otomi was actually spoken. The god of the Tlaxcaltecs was not Tezcatlipoca bearing the spear thrower, but the arrow-shooting Camaxtli, who is never seen without the pouch in which he carries his arrowheads of flint. And the ruder, more rustic, but also warlike, nature which was attributed to the Tlaxcaltecs was undoubtedly due to the stronger admixture of the indigenous Chichimec, that is, Otomi, element.

The shields which the chieftains hold in their hands are of three sorts. The fourth figure from below in the left row holds a shield whose surface is decorated with five tufts of down arranged in a quincunx. Such shields are mentioned in the Sahagun manuscript under the name of iui-teteyo, "decorated with single balls of feathers". Another shield, on whose surface are five small gold plates arranged in a quincunx, is called, correspondingly, teocuitla-teteyo. The shield with the tufts of down arranged in a quincunx is carried by the idol of Uitzilopochtli (see the picture of it in Codices Telleriano-Remensis I, page 9, and Vaticanus A, page 71, which represents the fifteenth annual festival, Panquetzaliztli, the feast of Uitzilopochtli). Uitzilopochtli's shield is called teueuelli. It is described as follows in the Sahagun manuscript of the Biblioteca Lorenziana: Otlatl in tlachivalli, otlachimalli, nauhcan tlapotonilli quauhtlachcayotica, iuichachapanqui, moteneua teueuelli; that is, "made of reeds, with eagle's down stuck on it in four places in conglomerate masses; it is called teueuelli". Together with the shield, Uitzilopochtli bears four spears that are tipped with tufts of down instead of stone points, which were called tlauaçomalli.[a] The shield with the tufts of down also appears constantly in the Mendoza codex, where the symbol of war—shield, spear thrower, and bundle of spears—is represented before the picture of the king. From this latter fact it has been concluded that this shield was used by the Mexican kings; but I doubt whether this was the case. Uitzilopochtli bears this shield, as he bears the tlauaçomalli (the four spears tipped with tufts of down instead of stone); that is, he has the weapons which were placed in the hand of those destined to a sacrificial death—to the sacrificio gladiatorio (see *a* and *b*, figure 39), because to a certain extent he represents the conception of a warrior's death—a death by sacrifice on the round stone (temalacatl). There is an interesting statement in regard to these weapons of Uitzilopochtli in the annals of Chimalpahin. We read there that the elder Motecuhzoma in the year 1440, before he was installed as a ruler, went to the Chalca to beg the princes of Amaquemecan to set in motion the otlanamitl and the teueuelli (ynic conolinique in otlanamitl in teueuelli), in order that the Tepanecs might be subdued (inic opopoliuh in Tepanecatl).[b] Here teueuelli is the name of Uitzilopochtli's shield and otlanamitl should read otlanammitl. The latter word is derived by contraction from otlanauh-mitl and means "the four bamboo arrows". The whole is undoubtedly only a figure of speech.[c] Motecuhzoma simply asks the Chalca to support him in war against the Tepanecs. But that a figurative expression of this kind could be used proves that teueuelli universally denoted the shield of the war god, for the god of the Chalca was not Uitzilopochtli, but Tezcatlipoca.

The shields of the other warriors on our fragment III (plate VIII) are of two types, the two which occur most frequently among the armor depicted in the tribute list and in the Mendoza codex. The first, third, and sixth warriors, from below, in the left row and the lower of the two on the right side, have shields whose surface exhibits a stepped meander pattern, undoubtedly executed in feather work, as on the ancient Mexican shields in the Museum of National Antiquities at Stuttgart. A shield of this kind was called xicalcoliuhqui chimalli.[a] The pattern on the Stuttgart shield is executed in green and yellow, and the shields of this kind on the tribute list have the same colors, without a single exception. On our fragment the colors chosen are blue and red. The second warrior, from below, in the left row and the adjacent upper right-hand warrior have a shield with concave cross bands curving upward, with one golden crescent above and three below. Such shields were called cuexyo chimalli.[b] The background of these shields is usually red, and so it is on our fragment. The warrior who follows in the upper row on the left, of whom only the lower half is visible, has a shield with a plain red surface. Concerning the other weapons and articles of dress there is not much to be said.

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[a] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, p. 122.

[b] Chimalpahin, Seventh Relation, pp. 105, 106.

[c] Rémi Siméon translates the passage: qu'ils transportassent les engins de guerre pour renverser les Tépanèques ("that they would transport the engines of war to overthrow the Tepanecs"). It does not refer to engines of war, nor would the Chalcas, if they had owned such a fetish, have actually given it out of their keeping, nor, finally, does on-oli-ni mean to transport to any other place.

The maquauitl, strangely enough, is painted blue in every instance. The Mexicans frequently denoted metal (silver), and usually turquoise mosaic, by blue in their paintings. But there can be no question of metal here, for a metal club would not be armed with splinters of obsidian, and turquoise mosaic was employed only in the ornamentation of costly gala weapons, if at all. The clubs might have been painted blue in imitation of turquoise mosaic, just as warriors wore wooden ear pegs painted blue instead of those incrusted with turquoise, as worn by the king.[c]

Arrows and spears are represented, as in all Mexican paintings, tipped with stone. The feathers at the nock end are applied somewhat below the end of the shaft, so that the end of the arrow can be placed on either the bow string or the peg of the spear thrower. The feathers are drawn en face, that is, with the broad side next the shaft. This, however, is probably due to defective drawing. In reality they must have lain perpendicular to the shaft. Thus, eyes are never drawn in profile, as they actually are in a face drawn in profile, but are always drawn en face. A ball of down is invariably attached to the base of the feather. The quiver worn by one warrior on our fragment is painted yellow, with black spots, and is therefore supposed to be made of jaguar skin. All the figures are naked, save for the maxtlatl, "breechcloth," which is here painted red in all cases.

The warriors in the row on the left are represented as engaged in combat. Each of the three on the right side is dragging a prisoner, and broad streams of blood mark the paths they have traversed with their captives. Opposite the middle one of the three warriors is a man who seems to be in the act of receiving the victim with animated gestures. He wears only a red cap on his head, and is perhaps meant for a priest.

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[a] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, pp. 140, 141.

[b] Zeitschrift für Ethnologie, 1891, v. 23, p. 137.

[c] Yuan conaquia xiuhnacochtli, uel xiuitl, auh yn cequintin çan quauitl yn tlachiualli tlaxiuhycuilolli ("and they wear turquoise ear pegs, which are made of turquoise, and others wear them of wood only, which are painted after the manner of turquoise"). Sahagun, v. 2, chap. 37. Manuscript Biblioteca del Palacio.

These representations of war and capture are bordered on the right side of the fragment by another series of pictures at right angles to the former. Here, somewhat crudely and awkwardly executed, is a series of place hieroglyphs, before each of which is drawn a personage seated on a chair, who must be meant for the ancestor of the tribe settled in that place. Most of these personages seem to hold flowers in their hands, probably to express peaceful enjoyment, therefore secure dominion. The king in Codex Vaticanus A, page 86, is similarly depicted, richly dressed, with a tobacco pipe in one hand and a bunch of flowers in the other.

At the beginning of the series below, on the left, there is still to be seen the head of one of these figures and the bunch of flowers which he holds in his hand. All the rest is missing.

Then follows a mountain with a thatched house on its top, and in front of it sits a man whose name is represented by the eagle's head above. The explanatory note reads: níca yahuayohca yn toca cuitli yn toconcol, that is, "here is the place called yauayohcan. Cuitli, 'hawk', is the ancestor". Yauayocan might mean "where they walk in a circle". Cuitli is undoubtedly a dialect expression for cuixtli (cuixin, cuiztli), the name of a smaller bird of prey (cuixin, "milano"). I find cuixtli as a proper name, for instance, in the list of names of Almoyauacan in the Manuscrit Mexicain number 3, Bibliothèque Nationale (see *a*, figure 41).

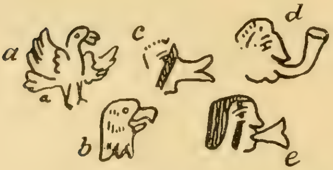
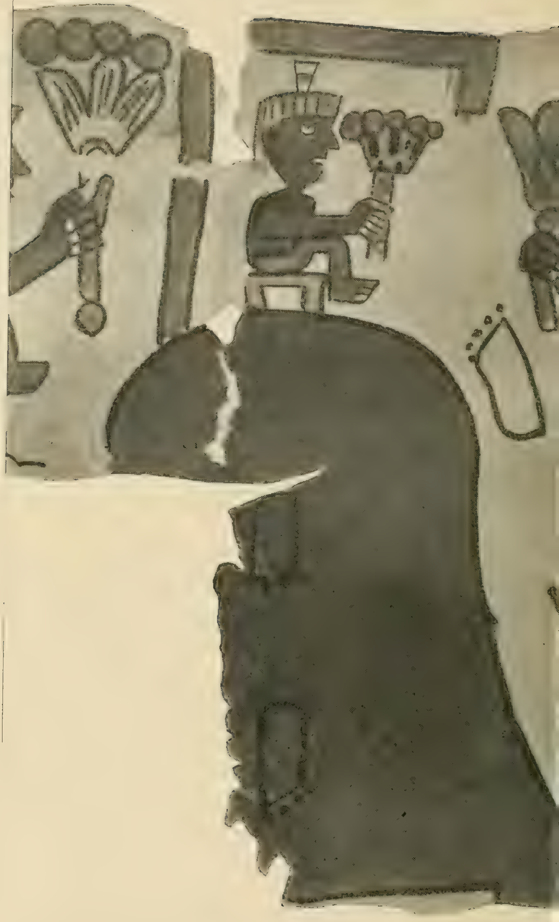
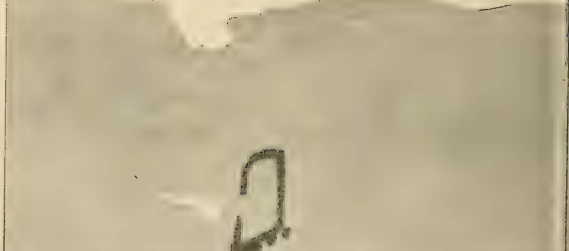


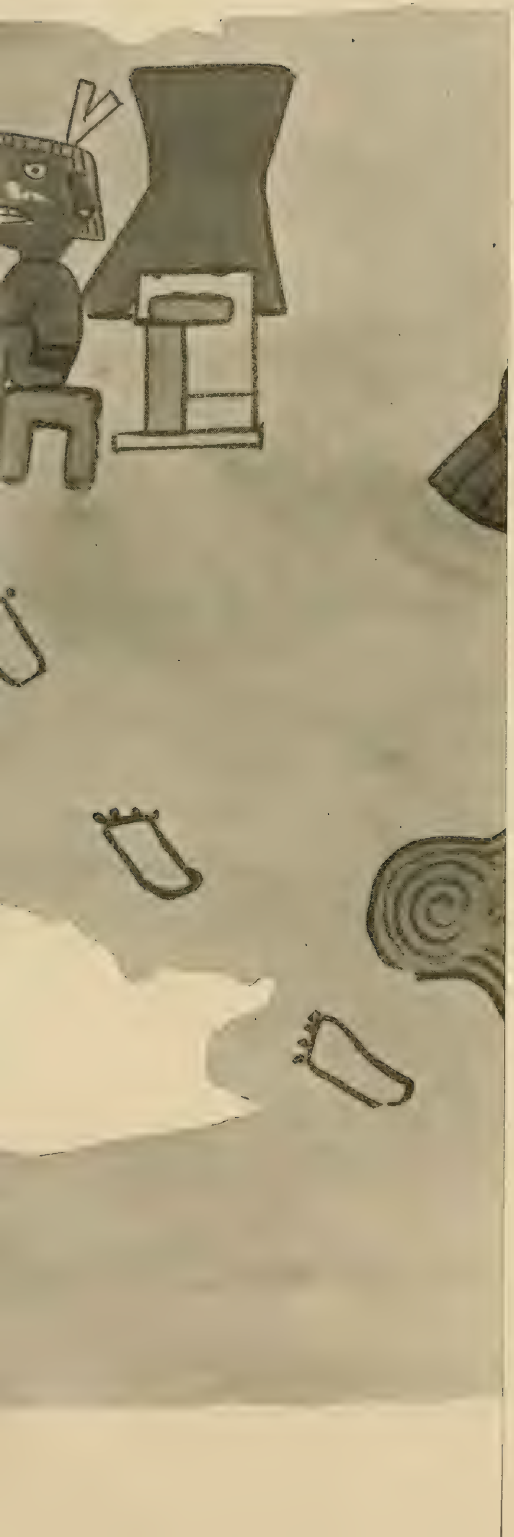
FIG. 41. Mexican glyphs from list of names.

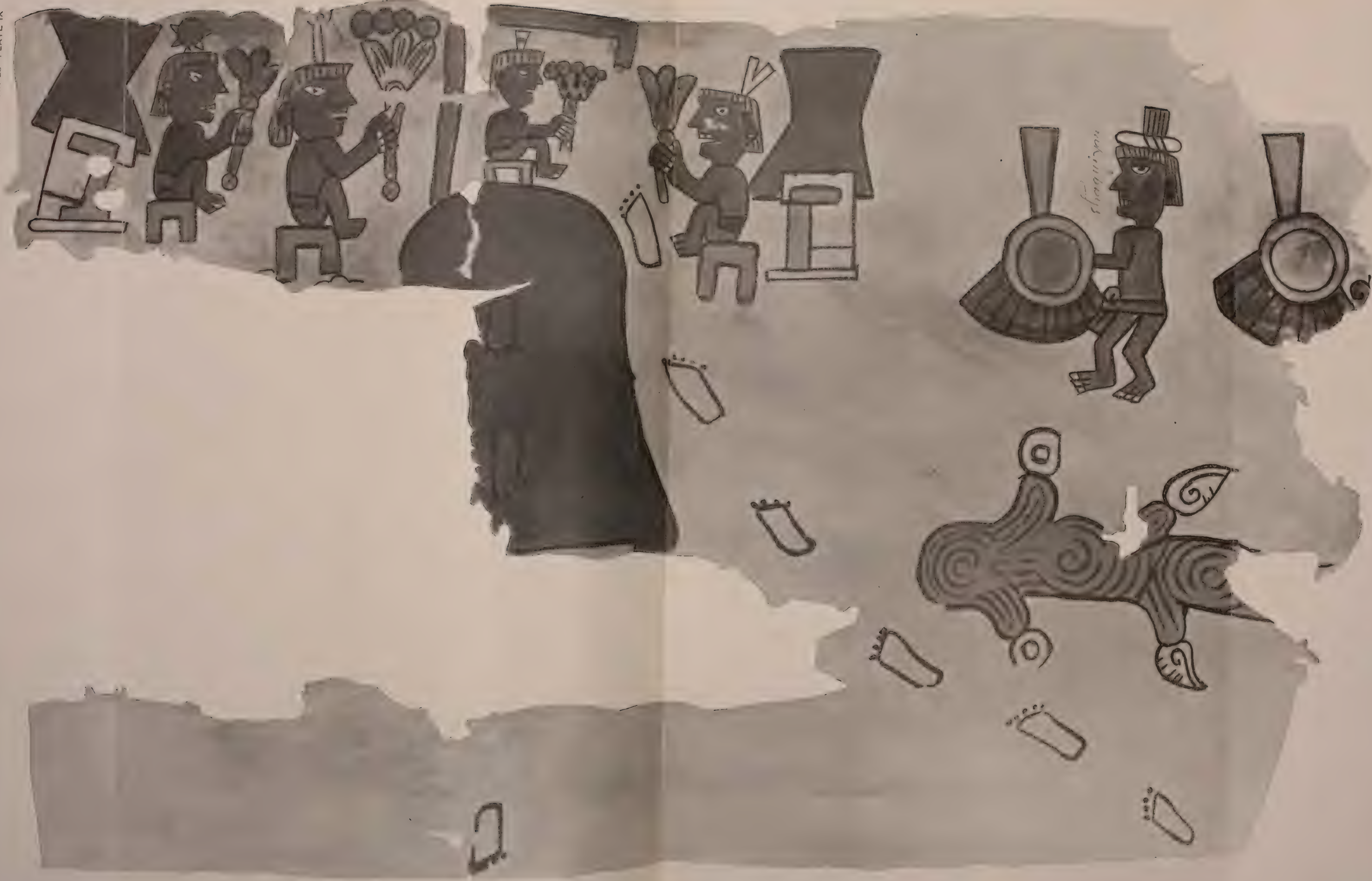
Then follows a house with a stone roof and a person in front of it, above whom we see the head of the wind god by way of name hieroglyph. The place hieroglyph which doubtless was originally over the house is missing, and as there is no explanatory note there is naturally nothing to be said regarding the place. According to the hieroglyph, the person must have been named Ehecatl, a word which often occurs as the name of a person. On account of their unusual form, I give three designs, *c*, *d*, *e*, which in the list of names of Almoyauacan (Manuscrit Mexicain number 3) designate persons by the name of Ehecatl.

Next follows a mountain with a bush on the top, painted rose-color; in front of it, a house with a stone roof; and before this, sitting on the tepotzo-icpalli, the woven-straw seat with a back, a personage whose name is indicated by a jaguar's head above. The note says: Auh nicah zacateotlah yn toconcol yn tocah ocenllotli ("and here follows Zacateotlan. His ancestor's name was Ocelotl"). Boturini read this Zacatzotlah. As I read the name, it contains the words









MEXICAN PAINTING—HUMBOLDT FRAGMENT IV

zaca-tl, "grass", teo-tl, "god", and the final syllable tla or tlan, which has the significance of a locative. Oceotl, "jaguar", is a very common proper name.

The last picture in the series is again a house with a stone roof; but the place hieroglyph, which must have been there originally, is missing. A personage is drawn in front of the house, whose name is given above by the representation of a stone knife (tecpatl). Here, too, there is a note, but it is almost illegible. The place name, in particular, can not be deciphered. I read: Nica mazap —— lc —— yn toca ——.

The notes, few words as they contain, are remarkable on account of their dialect form. In classic Aztec, nican means "here"; tocōcol, "our ancestor"; ocēlōtl, "the jaguar". The writer who added the notes on our fragment III (plate viii) drops the final nasal after the short a in nican, and writes nica and nicah. And thus yahuayohca and zacateotlah probably stand for yauayocan and zacateotlan. After the long vowels o and e, on the other hand, he inserts a nasal. He distinctly writes, both times, toconcol, "our ancestor", and ocenllotl, "the jaguar". I will mention here that, also in Tezozomoc's Crónica Mexicana, compilli is written for cōpilli, and occasionally also ocenlotl. So, too, we occasionally find in Sahagun Tontec for Totec (one of Xipe's names).

Fragment IV is, as I have said, and as inspection shows, a piece of the same manuscript to which fragment III (plate viii) belonged; but it is difficult to determine whether it should be added to any part of it.

On fragment IV (plate ix) we have, to the right, the figure of a warrior and the shield and maquauitl of another. The face painting and ornaments are the same as those of the warrior figures on the previous fragment, but the shield has a plain red surface. Beside the foremost warrior is a word which I read Ehcaquiyauh. The quiyauh seems quite plain, but the other part is perhaps doubtful. Ehcaquiyauh would mean "wind and rain". Below the figures of warriors there is executed on a large scale a stream of water, with drawings of whirlpools on its surface and snail shells on its branches. On the upper edge there is a series of representations, proceeding from the left, which correspond to those on the right side of fragment III (plate viii). But there are no explanatory notes. The houses are thatched with straw. The small benches on which the personages sit are all painted blue, like the wood of the maquauitl. The first person from the left seems to carry the picture of a six-rayed or seven-rayed star, painted yellow, above his head, by way of a name hieroglyph. Hence the man's name was probably Citlal. Over the head of the second I think I see the drawing of a bone, and over the third that of a thorn. These people were therefore probably called Omitl and Uitz. The angular figure over the head of the fourth person, which seems likewise to be a name hieroglyph, I can not explain.

Footprints are drawn on both fragments, running between the various representations, denoting a road or a journey in each respective direction. On fragment III (plate VIII) the lower row of footprints leads from above on the left to below on the right; the upper row from below on the right to above on the left. On fragment IV (plate IX) there is a similar indication of paths leading in two directions. If we hold the fragment as the figures stand, the footprints on the left lead downward from above—in this row there is but one footprint—but on the right they lead upward from below. The tracks themselves, rudely sketched, are very different from the usual delicate drawing which we saw, for instance, in the paths on fragment II (plate VII). But this very fact showed me at a glance that a fragment preserved years ago in the Biblioteca Nacional at Mexico, from which I made a little drawing at the time, must have belonged to the same large manuscript. Here, in a bow-shaped green inclosure, are to be seen the four persons whom I reproduce in figure 42 from the drawing just mentioned. Above, on the right, is a man invested in the insignia of a priest, meca-cozcatl and ie-tecomatl (see pages 146 to 148), wearing the face painting of the fire god, the god who

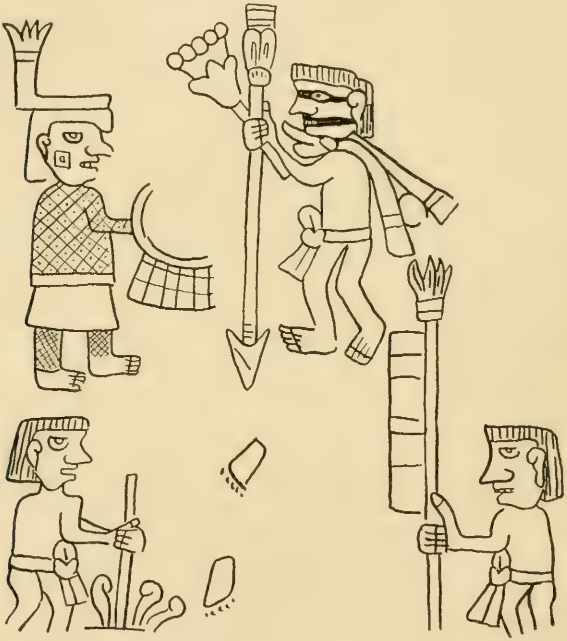


FIG. 42. Figures from Mexican manuscript, fragment IV.

was considered the old and original god, and holding in his hand a nosegay and a spear. Opposite him is a goddess with an erect, horn-like tuft of feathers on her head, therefore probably Xochiquetzal. Below, on the right, is an attendant god or priest with a banner in his hand. Below, on the left, is another, who is procuring fire by friction. Beside the latter the date chicuey ytzcuintli is written, which must be meant to represent the name of this person. Beside the banner-bearer is the word Xochitonal (?). Beside the chief figure above, on the right, is another explanatory note, which I probably copied incorrectly, for I can not interpret it; but it begins with the word nicah, the same word in the same dialect form with which the notes begin on fragment III (plate VIII) of our collection.

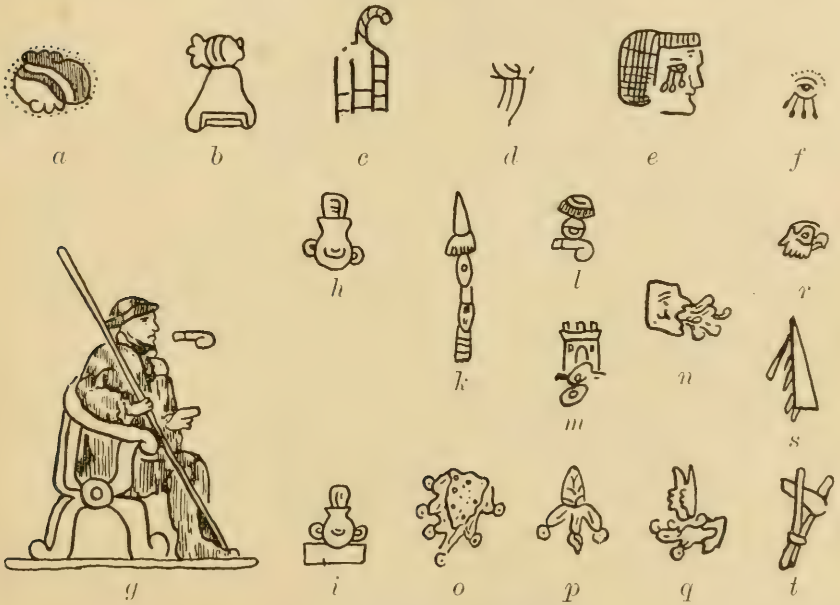


Fig. 43. Mexican name glyphs.

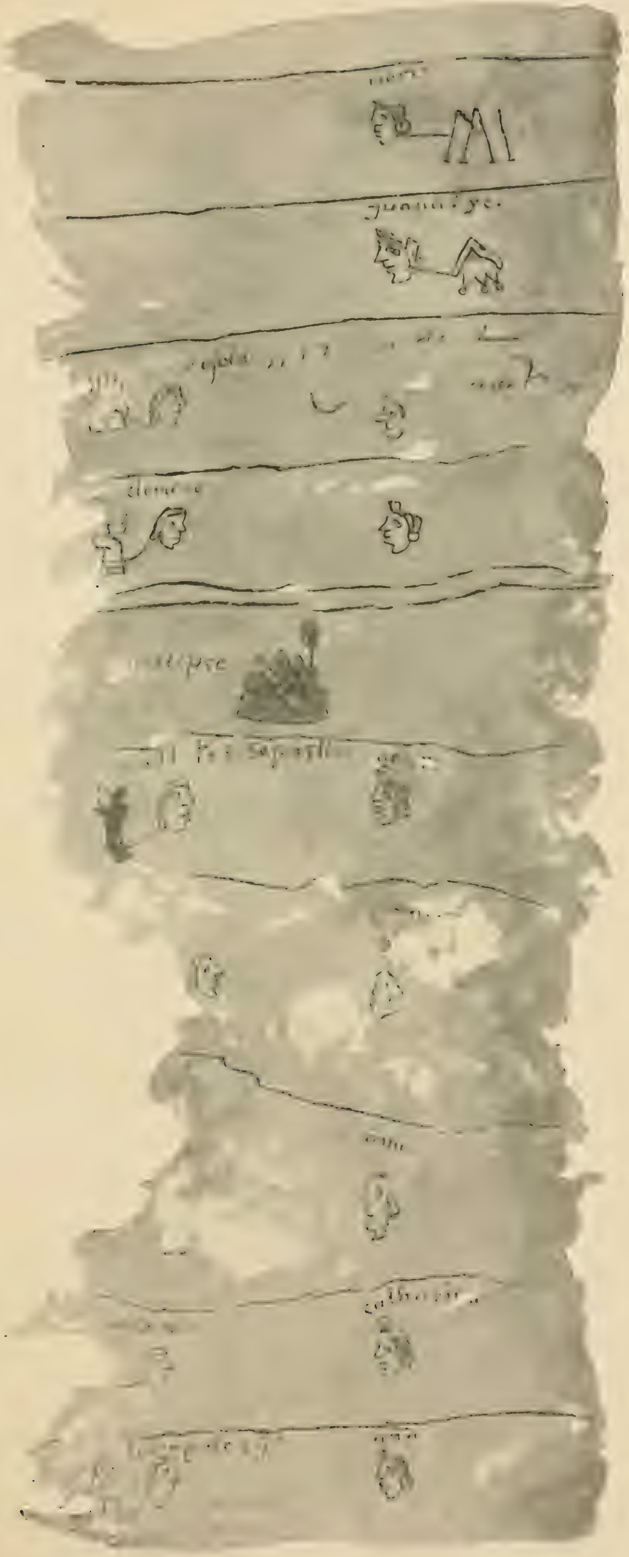
It is greatly to be desired that the present very able and energetic director of the Museo Nacional of Mexico may speedily publish also the fragments of this great manuscript, now in the possession of the museum, for in spite of its coarse and clumsy drawings the manuscript is very interesting.

FRAGMENT V

Next we have a piece of agave paper 42 cm. long and 15½ cm. wide, divided into ten divisions by cross lines (plate X). The writer seems to have begun in the old way (see fragment I, plates II to VI of this collection), at the bottom, and to have proceeded upward, for there appears to have been nothing above the topmost line. It is to be noted that the drawings are made in a different ink, blacker and more permanent, than that in which the names were entered.

About the middle of the fragment, in the sixth division from below, we have the hieroglyph of a place. I think the explanatory note should be read tezontepec. The hieroglyph is in the familiar form of a mountain (tepe-tl) bearing a tree. But the mountain is here divided, as it were, into a series of cliffs and prominences, which are painted a light bluish green in the middle and reddish at the edges, and its surface is diagonally crossed by a band contrasting sharply with the rest of the coloring. The light diagonal band is probably intended to recall the familiar hieroglyph of the stone (tetl) (see *n*, figure 37, and *a*, figure 43, the hieroglyph of Tepoxauac, "where the stones are loose"). The alternately lighter and darker portions in this hieroglyph reproduce the various veinings of stone. In our hieroglyph irregular black stripes occur, both on the diagonal band and on the various cliffs and prominences of the mountain. This, I believe, is meant to indicate the porous quality of the stone, for tezontli means "stone froth". This was the Mexican name for a porous stone which occurs in the valley of Mexico, and which, like the Roman travertine, has been much used for building purposes from the earliest times. In the Pintura del Gobernador, Alcaldes y Regidores de México, which is preserved in the archives of the Duke of Osuna, a village called Tezontepec (*b*, same figure) is mentioned in a list with Hueypochtlan, Tequisquiac, Nestlalapan, Tlemaco, etc., as subject to a "comandero". It is very likely the place in the district of Tula, state of Hidalgo, which is still known by that name. The report published by Doctor Peñafiel, concerning the municipal divisions of the Republic of Mexico in 1884, mentions still another Tezontepec in the district of Pachuca. Of course it is impossible to state with certainty which Tezontepec may be meant here.

In the other divisions (plate x) there is a man on the left and a woman on the right, except the two uppermost divisions, in which there is only a woman. The woman is always recognized by the manner of wearing the hair, which is marked by a bunch on the neck and two braids standing erect above the forehead, like horns. The names of the persons are written over them, and behind some of the heads a name hieroglyph is given. Several red dots are painted between the man and the woman in each division, varying from 4 to 8 in number. They are usually arranged in two rows, and where the number is uneven the row containing the smaller number of dots is placed uppermost. Here again the writer seems to have proceeded from below upward. The whole was probably a sort of parish register of the village of Tezontepec, in which the



MEXICAN PAINTING—HUMBOLDT FRAGMENT V

man and wife in every household were given, with their names and the number of their children. This is confirmed by the fact that in the two topmost divisions, where only a woman and a number of red dots are entered, after the woman's name is the remark "ye", which is the abbreviation for ycnociuatl, "widow".

In the lowest division, over the man's head is written the name lolenzo te s. fo, that is, Lorenzo de San Francisco—for in the Mexican language there is no r nor d—and behind it is a hieroglyph which is partially destroyed and somewhat hidden by a fold in the paper, but is still clearly to be recognized as the drawing of a gridiron (see *c*, figure 43), the hieroglyph for the name Laurentius. The woman opposite him is named Ana, and the number of red dots is eight.

In the second division (plate x) from below the name Antonio is written above the man's head. Behind it was a hieroglyph, but unfortunately it is now wholly obliterated. The woman opposite him is called Catharina, and the number of red dots is eight.

In the third division from below the head, the name, and the hieroglyph of the man have been entirely destroyed by the fraying and tearing of the paper. The woman's name is Ana, and the number of red dots is eight.

In the fourth division the name over the man's head has also been destroyed, and the hieroglyph was hidden by a fold in the paper. I reproduce in *d*, figure 43, as much of it as I could see. The number of red dots is eight.

In the fifth division (plate x) from below I think I can read, above the man's head, matheo te s. sepastian. The hieroglyph is an arm painted yellowish brown, and in the hand is a round object painted light bluish green. I think that this is meant for the hieroglyph designating matheo, for ma-itl is the Mexican for "the arm", "the hand". The name of the woman opposite is not clear to me. The number of reddish dots is six.

In the sixth division, as I have already stated, are the name and hieroglyph of the village Tezontepec.

In the seventh division, above the man's head, only clemente can still be read. I can not interpret the hieroglyph. The woman's name is missing. Six (or eight) red dots are given.

In the eighth division, from below, in the note over the man's head, I can recognize distinctly only the second word. It is osola. The hieroglyph behind it seems to be intended for a bird's head with a tall crest of feathers. This may refer to the name; for çol-in means the quail. Over the woman's head is a very much faded explanatory note, of which I can make out nothing but ana d—— Rey——-tz. The number of red dots is four.

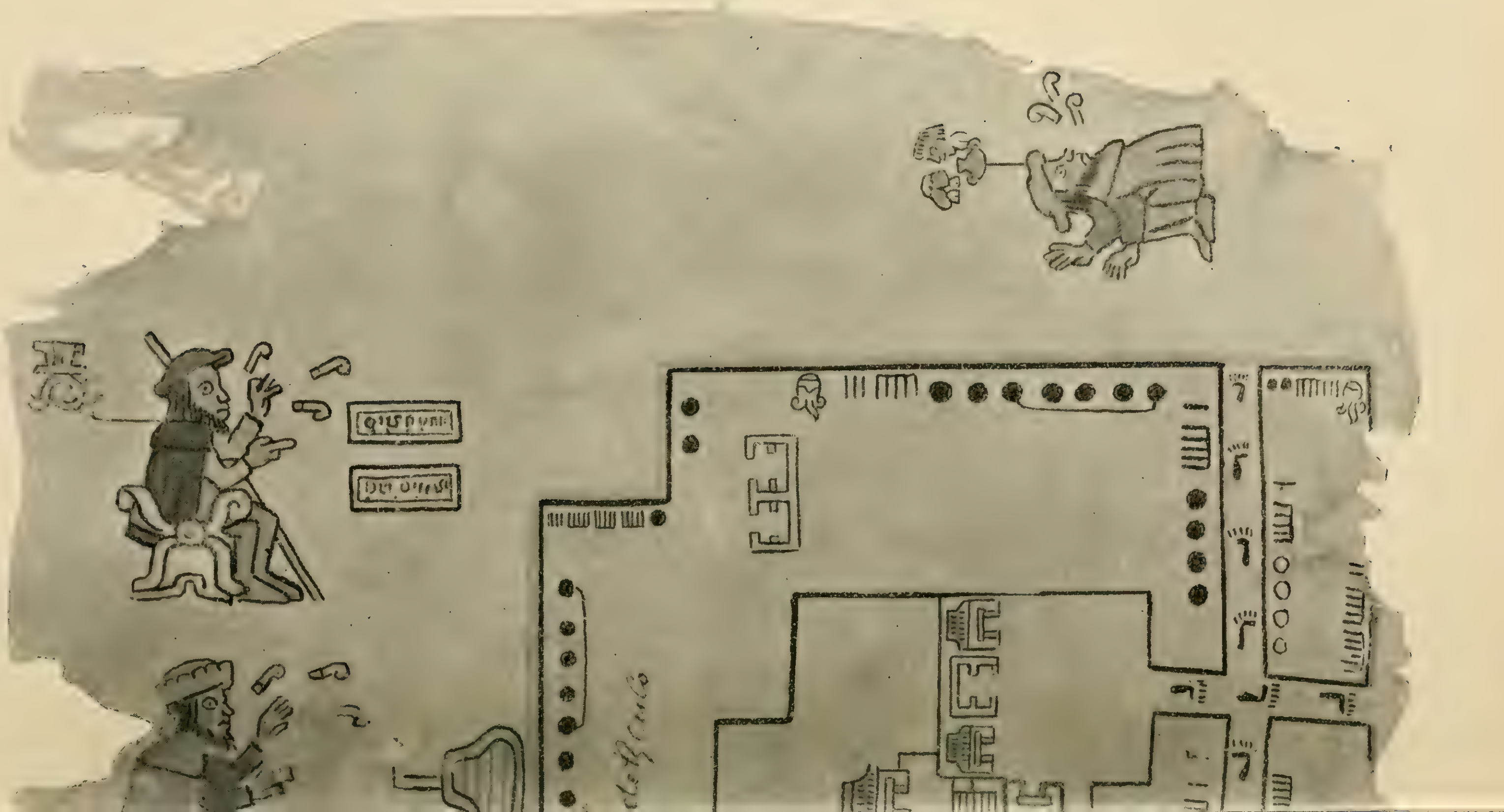
Before each of the windows in the two uppermost divisions there are five red dots. The lower one is named Juana, the upper one Maria. Behind the upper one is a design which looks like the monogram M A when cut in wood, and probably stands for the name Maria. Elsewhere—for instance, in the Duke of Osuna's Pintura—the name Maria is represented by a crown; for Maria is the queen of heaven. Behind Juana's head is a hieroglyph which represents an eye in an angle pointing upward, and below it three drops of water. This may be the hieroglyph for icno, "orphaned", "widowed". In the lists of names of persons in the Manuscrit Mexicain number 3 of the Bibliothèque Nationale this idea is always expressed by tears (see *e*, Icnotlăcatl; *f*, icno-ix).

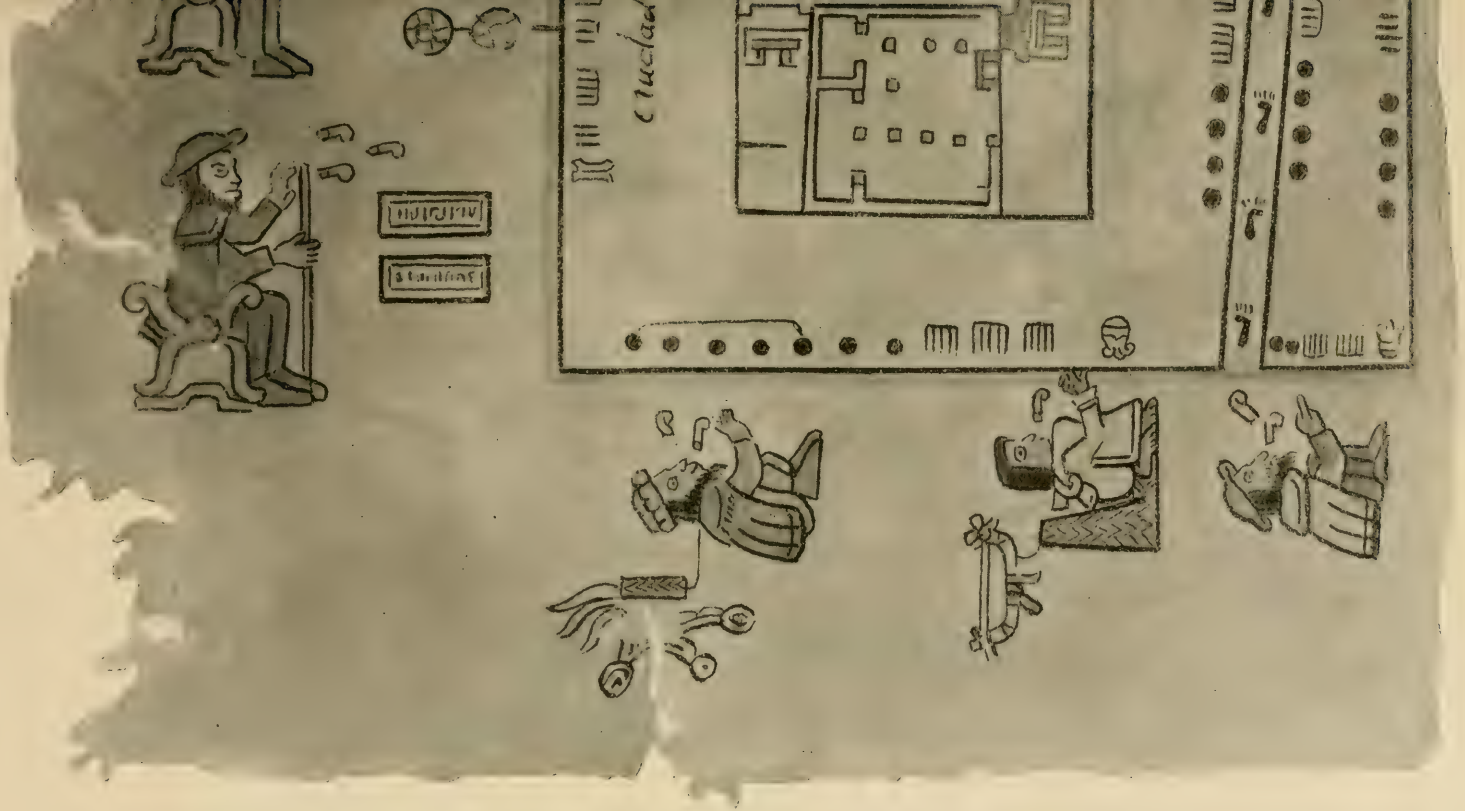
This document, too, in my opinion, belonged to the Boturini collection. In the catalogue of Boturini's Museo Indiano, under number 10, section 21, are mentioned siete pedazos de mapas en papel Indiano, de los pueblos Tezàrco, Tlacoàpan, Coyotèpec y Tezontèpec ("seven pieces of maps on Indian paper, of the villages of Tezàrco, Tlacoàpan, Coyotèpec, and Tezontepec"). One of these seven fragments, therefore, was designated by the name of a village, whose name and hieroglyph were found on our fragment V (plate x). Since the majority of the fragments of our collection belonged, as we shall see, to the Boturini collection, it is probable that this is not an accidental coincidence.

FRAGMENT VI

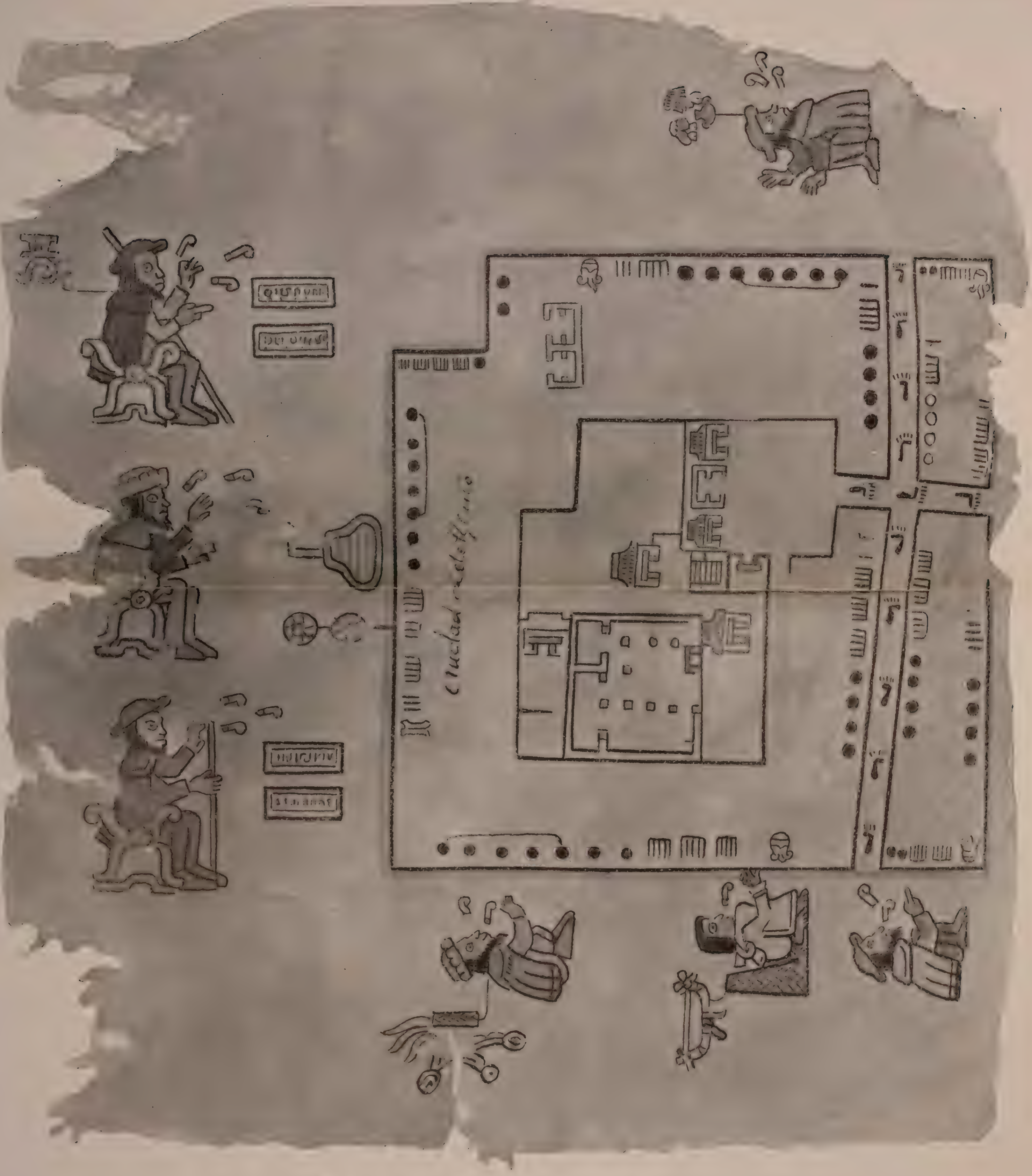
This is a piece of agave paper of the size of a quarto sheet (dimensions of fragment, 20 by 21 cm.), and is covered on one side with figures and drawings (plate XI). This is the document reproduced and described by A. von Humboldt in his Vues des Cordillères et Monuments des Peuples indigènes de l'Amérique, under the title "Pièce de procès en écriture hiéroglyphique (legal document in hieroglyphic writing)."

In the middle of the fragment is a ground plan of buildings. To the left of it are written the words ciudad de Tezcuco ("city of Tezcuco"). It is therefore clear that this is the ground plan of the capital of that name situated opposite Mexico on the other shore of the lake. In the middle of the right side a path leads into, or, perhaps more correctly, from the heart of the city, as the position of the footprints shows. At right angles to the first path and parallel to the right side, near the edge, there is a path which, as it seems, separates two smaller quarters from the main body of the town. In the center of the main part there is a large group of buildings, which is doubtless meant to represent the palace. Most conspicuous is a square room, which is entered by a door on the right. Door posts and rafters, which were usually of wood, are designated by their red color. Rows of





MEXICAN PAINTING—HUMBOLDT FRAGMENT VI


Ciudad de Mexico

MEXICAN PAINTING—HUMBOLDT FRAGMENT VI

pillars similarly painted, therefore probably of the same material, traverse the room. This corresponds exactly to what Juan Bautista de Pomar tell us of Nezahualcoyotl's palace at Tezcuco. He says that the buildings stood on raised terraces. The principal room was a hall over 20 ells in length and breadth. In the interior were many wooden pillars standing at intervals on stone bases, the pillars in their turn supporting the beams and joists: Son sobre terraplenos de un estado, lo que menos de cinco, ú seis el que mas. Los principales aposentos que tenian eran unas salas de veinte brazas y mas de largo, y otras tantas en ancho, porque eran cuadrados, y en medio dellos muchos pilares de madera de trecho à trecho, sobre grandes brazas de piedra sobre las quales ponian las madres en que cargaba la demas madera ("They stand on terraces of one height, five or six. The principal apartments were halls more than 20 ells in length and of width as great, because they were square, and in the middle were many wooden columns at intervals upon great stones, upon which pillars rested the beams of the ceilings"). Pomar's other statements in regard to the palace seem also to correspond with what we find drawn on our fragment. He says the entrance to these halls led from a courtyard, the ground of which was covered with a smooth layer of cement, and which was reached by a flight of steps. Besides these state apartments there were also a great number of special buildings for distinguished guests, for the women, and for the other numerous and various attendants of the palace, kitchens, closed courtyards, etc. Abia en estas casas aposentos dedicados para los reyes de Tacuba donde eran aposentados, quando à esta ciudad venian. Tenian aposentos para los demás señores inferiores del rey, sin otras muchas salas en que hacian sus audiencias y juzgados, y otras de consejos de guerra, y otras de la musica y cantos ordinarios, y otras en que vivian las mugeres, con otros muchos palacios y grandes cocinas y corrales ("There were in these houses apartments set apart for the kings of Tacuba, where they were lodged when they came to this city. There were apartments for all the other lords, inferior to the king, besides many other halls in which they gave audiences and delivered judgment, and others for councils of war, and others for music and ordinary singing, and others in which the women lived, with many other palaces and great kitchens and courtyards"). We see in fact on our fragment a staircase leading up to these edifices. We see, besides the principal building, five smaller, straw-thatched houses, and also a small square room, in which posts, but no doors, are indicated, and it might therefore be a closed courtyard (corral). A few similar courtyards, adjacent to each other, are indicated on our fragment, in addition to the main congeries of buildings, the actual palace, in the upper left-hand corner of the plan.

Around the sides of the main body of the town, as well as of the two separate quarters, numerals have been set down: single marks, which must mean ones; groups of five marks, of which, however, there are never more than three sets; and black circles, which must necessarily mean twenties, and therefore stand here in the place of the little flag which is generally the sign employed for the numeral 20. Where more than five black circles occur five of them are connected by a line, the number 100 being thus emphasized. Besides these numerals, wherever space allows there is the drawing of the heart, yollotl, that is literally, yol-yo-tl, "having life", so familiar in Mexican paintings. Hence, it is clear that living beings, the human souls actually present in the city, are being counted here. If we sum up, beginning on the right side at the bottom, we have the following numbers for the main body of the town: 96, 86, 148, 79, 158, 155, or a total of 722 persons. In the upper of the two separate quarters of the town the number is incomplete on the right side, the twenties being destroyed. On the other two sides, beginning below on the left, we have the figures 86 and 48; total, 134 persons. For the lower of the two separate quarters, on the right, left, and lower sides we have 84, 95, and 50; total, 229 persons. If we increase the second sum to the amount of the third by way of supplementing it with the missing numbers, the total would amount to slightly less than 1,200. Are we to suppose that this was the amount of the entire population of Tezcuco? I think not. The population had indeed greatly diminished after the conquest. While formerly, says Ixtlilxochitl, the smallest village in the district of Tezcuco had 1,100 heads of households or more, as is proved by the ancient doomsday books and lists of inhabitants, they now numbered scarcely 200, and some families had died out entirely. I do not think, however, that at the time to which we must attribute this page the number of inhabitants in the capital could have dwindled to 1,200. This very passage quoted from Ixtlilxochitl proves beyond a doubt that our fragment (plate XI) does not contain an enumeration of individuals, but only of heads of households (vecinos). Therefore, for the period in which our fragment was written, we ought to have a population of about 7,000, which is probably in accordance with the true condition of things.

I would further remark that the special arrangement of the numbers in this plan of the city probably owes its origin to the distribution of the inhabitants into quarters, or gentes (barrio, calpulli). Each separate tally probably corresponds to a separate calpulli, of which we must suppose that there were six in the main body of the town and three in each of the two detached quarters.

Around the plan of the town are seven sitting figures, six Spaniards and one Mexican. A. von Humboldt already correctly understood and has admirably characterized the general meaning of the proceeding which is thus represented. He errs only in regarding the plan of the city in the middle of the picture, which, as we have seen, is that of the city of Tezcuco, as the ground plan of an ordinary estate and as the object in dispute. He says in Vue des Cordillères et Monuments des peuples indigènes d'Amérique, page 56: Le tableau qui présente la douzième Planche paraît indiquer un procès entre des naturels et des Espagnols. L'objet en litige est une métaine, dont on voit le dessin en projection orthographique. On y reconnoit le grand chemin marqué par les traces des pieds; des maisons dessinées en profil; un Indien dont le nom indique un arc; et des juges espagnoles assis sur des chaises, et ayant les lois devant leurs yeux. L'Espagnol placé immédiatement au-dessus de l'Indien, s'appelle probablement Aquaverde, car l'hiéroglyphe de l'eau, peint en verd, se trouve figuré derrière sa tête. Les langues sont très inégalement reparties dans ce tableau. Tout y annonce l'état d'un pays conquis; l'indigène ose à peine défendre sa cause, tandis que les étrangers à longues barbes y parlent beaucoup et à haut voix, comme descendans d'un peuple conquérant ("The picture seen in the twelfth plate seems to indicate a law suit between the natives and the Spanish. The object of the dispute is a farm, a plan of which we see. We see the high road marked out by footprints, houses drawn in profile, an Indian whose name means a bow, and the Spanish judges seated on chairs, with the laws before them. The Spaniard immediately above the Indian is probably named Aquaverde, for the hieroglyph for water, painted green, figures behind his head. The tongues are very unequally distributed in this picture. Everything declares it to be a conquered country. The native hardly ventures to plead his cause, while the long-bearded strangers talk much and in loud voices, like descendants of a conquering race").

The three figures on the left side of the page are undoubtedly three judges, in fact the president of the audiencia and the two oydores. We must thus explain the relation in which the three stand to one another, for the judge in the middle is distinguished from the other two by a richer cap. The illustration as a whole corresponds perfectly with the manner in which the oydores are represented in the Pintura del Gobernador, Alcaldes y Regidores de México (Osuna codex). The chair and the staff are their badges of office (see *g*, *h*, *i*, figure 43, the picture of Doctor Horozco, oydor, from page 3 [465] of the above-mentioned manuscript). The papers lying before them are probably not meant for the statute books, but for the written records of the suit. It is worthy of note that there are absolutely unintelligible characters on these papers. They represent the confused impression of writing made on one who can not read. The two men sitting beside the Mexican are his vouchers, the witnesses summoned by him. The Spaniard on the opposite (the upper) side of the fragment, who turns his head away and answers at great length, is evidently the defendant, who denies the accusation brought against him. There were hieroglyphs behind all these persons, except the second witness. Unfortunately those behind two of the judges are destroyed.

One of the persons can be identified beyond a doubt by these hieroglyphs. This is the Mexican. Behind him is the figure of a bow (tlauitolli) as his name hieroglyph. It is apparent that he occupied a high position among the natives, that he must have been of royal rank, for he is represented sitting on the tepotzoicpalli, the straw chair with a high back. Now, we actually know, that in the middle of the sixteenth century men by the name of Tlauitol, descendants of the old Tezcucan royal family, ruled in Tezcuco. Chimalpahin mentions one, San Antonio Pimentel Tlauitoltzin, whom he calls the son of King Nezahualpilli, who died in 1515—Torquemada describes him as the grandson of Nezahualpilli—who was installed as king (tlahtouani) of Tezcuco-Aculhuacan in the year 1540 by the Spaniards, and died in 1564 after reigning twenty-five years. This statement is unquestionably based on an error. In the Sahagun manuscript, which was written in the year 2 Acatl, that is, 1559, Don Antonio Tlauitoltzin is mentioned as the twelfth king of Tezcuco, the seventh after Nezahualpilli, and it is stated that he reigned six years. And after that Don Hernando Pimentel is mentioned as the thirteenth king of Tezcuco, his Mexican name being Iuian, that is, "the mild", "the modest", a word which is reproduced in the name hieroglyph accompanying the picture of this king by two bare feet, perhaps expressing "chi va piano, va sano". The latter at the time that this was written (in the year 2 Acatl, or A. D. 1559) must already have reigned fifteen years, and therefore have come to the throne in 1545. The six years during which Don Antonio Pimentel Tlauitoltzin was said to have reigned must have been the years 1540–1545. Chimalpahin has evidently merged the periods of rule of these two men into one.

Of Don Antonio Pimentel Tlauitoltzin we know from Torquemada, who mentions him in various places, that he was a quiet, sensible man, who devoted himself with special interest to collecting and writing down the ancient traditions of his family and his race. Torquemada possessed a "Memorial" written by him, in which he gives an account[a] of ancient things, en estilo de historia, al modo que usamos nosotros ("in historic style, in the manner which we use"). Juan Bautista de Pomar says of him, that he cultivated mulberry trees and bred silkworms, that in his (Pomar's) time, that is, in the year 1582, there were still mulberry trees in the vicinity of Tezcuco, y en tiempo antiguo la cogia (la seda) Don Antonio Tlauitoltzin cacique y gobernador que fué de esta ciudad, hijo de Nezahualpiltzintli ("and in ancient times Don Antonio Tlauitoltzin, who was cacique and governor of that city, son of Nezahualpiltzintli, gathered it (the silk)").

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[a] Monarquia Indiana, v. 16, chap. 19.

It is not so easy to determine the other persons on our fragment. Since Tlauitoltzin only reigned until the year 1545, the event to which our fragment refers must have occurred before that date. At that time the viceroy, Don Antonio de Mendoza, was still reigning—from the year 1534. The bishop of Santo Domingo, Don Sebastian Ramirez de Fuenleal, was president of the audiencia until 1535. His oydores were the licenciados Juan de Salmeron, Alonzo Maldonado, Zeynos (or Zaynos, as it is also written), afterwards president of the audiencia, and Quiroga.[a] The names of Spaniards were frequently reproduced by the Mexicans in hieroglyphs, which are often perfectly intelligible, but often too very hard to understand and, without doubt, frequently do not represent the name itself, but a nickname by which the person in question was known among the Indians. It is well known that Pedro de Alvarado went by the name Tonatiuh, "sun", among the Indians. He is therefore hieroglyphically designated by a picture of the sun. The viceroy Antonio de Mendoza is designated in Codex Telleriano-Remensis by a spear, *k*, figure 43; the third viceroy, Luis de Velasco, in the Pintura del Gobernador, Alcaldes y Regidores de México (Osuna codex), by *l*, which is composed of the tongue of eloquence, an eye, and, above it, another object, difficult to explain. The name Gallego is expressed in the same manuscript by *m*, and that of Doctor Vasco de Poga by *n*. Both are easily understood. In *m* we have the figures of a house (cal-li) and of beans (e-tl), or Cal-e; and *n* is explained by the fact that poc-tli in Mexican means "smoke". The hieroglyph for Doctor Zorita, *r*, the head of a quail, is also perfectly obvious, because çol-in is the Mexican word for quail. But *o* for Doctor Villanueva, and *p* for Doctor Villalobos still puzzle me; so does *q* for Doctor Bravo. The hieroglyph, *s*, for Doctor Zeynos seems to represent the prickly point of a leaf, and *t*, the hieroglyph for the fiscal Maldonado, is the picture of a pair of wooden tongs and a red (red-hot?) object which is held in their grasp. Lastly, the hieroglyph for Doctor Horozco, *h*, is most strikingly like that of San Francisco, *i*.

Most of the hieroglyphs which I have mentioned here belong to persons of a later time than that to which our fragment VI (plate XI) belongs. Unfortunately, but few hieroglyphs of Spanish names of this earlier period are positively known to us, and they are not to be interpreted at haphazard, as can readily be seen from the examples just given.

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[a] Motolinia, v. 3, chap. 3.

It still remains to discuss the pictures on our page (plate XI), which are on the left of the plan of the city, directly in front of the presiding magistrate. Two of them, the two circles, painted bluish green in the original and filled in with irregular squares, are perfectly clear. They represent turquoise mosaic and have the phonetic value of Xiutl, that is, "year" (see page 160). We must conclude that the occurrence which is treated of here took place two years before, or else that the trial lasted two years. The other object is not so easily interpreted. It looks like a bag or a bottle-shaped vessel. A stick or pipe is apparently joined to it above, and a fine thread seems also to be fastened to it. The inside is entirely filled with wavy red lines. Although various suggestions occur to me, I do not venture to express a definite opinion in regard to the meaning of this object.

Fragment VI (plate XI) seems to have belonged to Boturini's collection and to be described by him in his Museo Indiano, number 7, section 3. He says there:[a] Otro mapa en una quartilla de papel Indiano, donde se vé pintada la ciudad de Tetzcoco, con unas cifras, que especifican su extension en lo antiguo ("Another map of a quarter sheet of Indian paper, where we see the city of Tezcuco, painted with figures, which specify its size in old times"). Our page, too, is a map in quarto (un mapa en una quartilla de papel Indiano), and has a picture of the city of Tetzcoco, and numerals are inscribed upon it, as we have seen, only they do not indicate the size of the city, as Boturini here supposes, but the number of its inhabitants.

FRAGMENT VII

This (plate XII) is a strip of agave paper, 25 cm. long and about 18 cm. wide, with four rows of writing beginning below at the right, a fifth row being only indicated.

On the right side of the divisions are circles. One of them, that in the fourth row from the bottom is painted red and contains a verticillate design, a kind of two-armed swastika. This undoubtedly means a Sunday. In accordance with this the circles at the right end of the lower divisions must likewise mean days, and since the progression is upward we should have Thursday in the lowest division, Friday in the second, and Saturday in the third from the bottom. In accordance with this, Friday would be characterized by the circle, the upper half of which is painted black. This would be comprehensible. It was the day of Christ's crucifixion and a fast day commanded by the church. Thursday and Saturday would be alike designated, to wit, by a circle with a kind of arrow on it. I think that this was only a hieroglyph for a working or week day.

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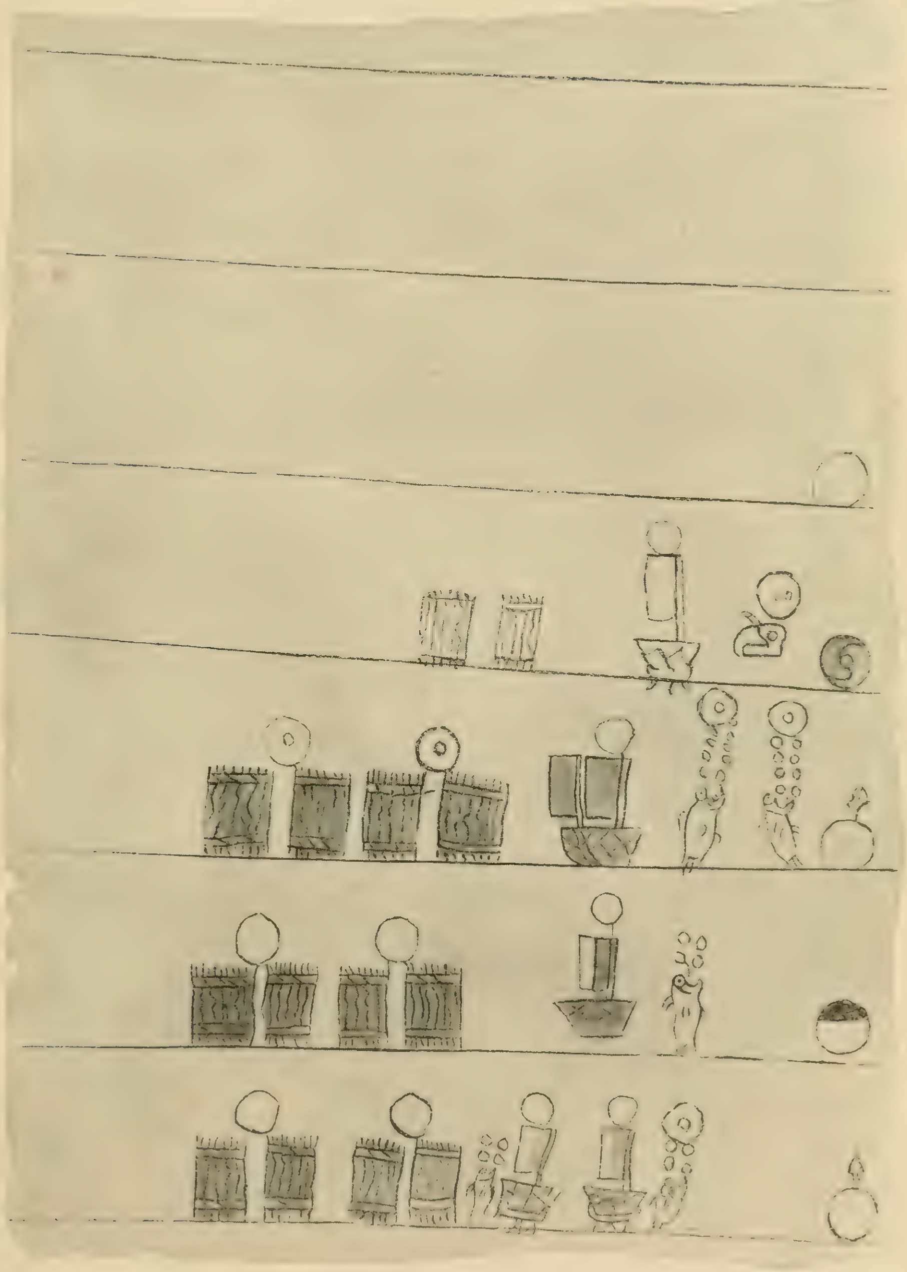
[a] Place cited, p. 5.



MEXICAN PAINTING—HUMBOLDT FRAGMENT VII

Inside in the lowest row, between fishes, were baskets woven of straw (painted yellow), apparently of pliable material, each of which in this lowest row rests on a flat disk having three feet. These are apparently the little baskets in which hot tortillas were brought. Last, on the left, follow bundles, apparently meant to represent zacatl, "green cornstalks", which have been used in preference for horse fodder from the time of the conquest to the present day (see *a*, 1 and 2, figure 44, the former taken from the Goupil-Boban atlas, plate 27, the latter from the Pintura del Gobernador, Alcaldes y Regidores de México, and both described in the text as Zacatl).

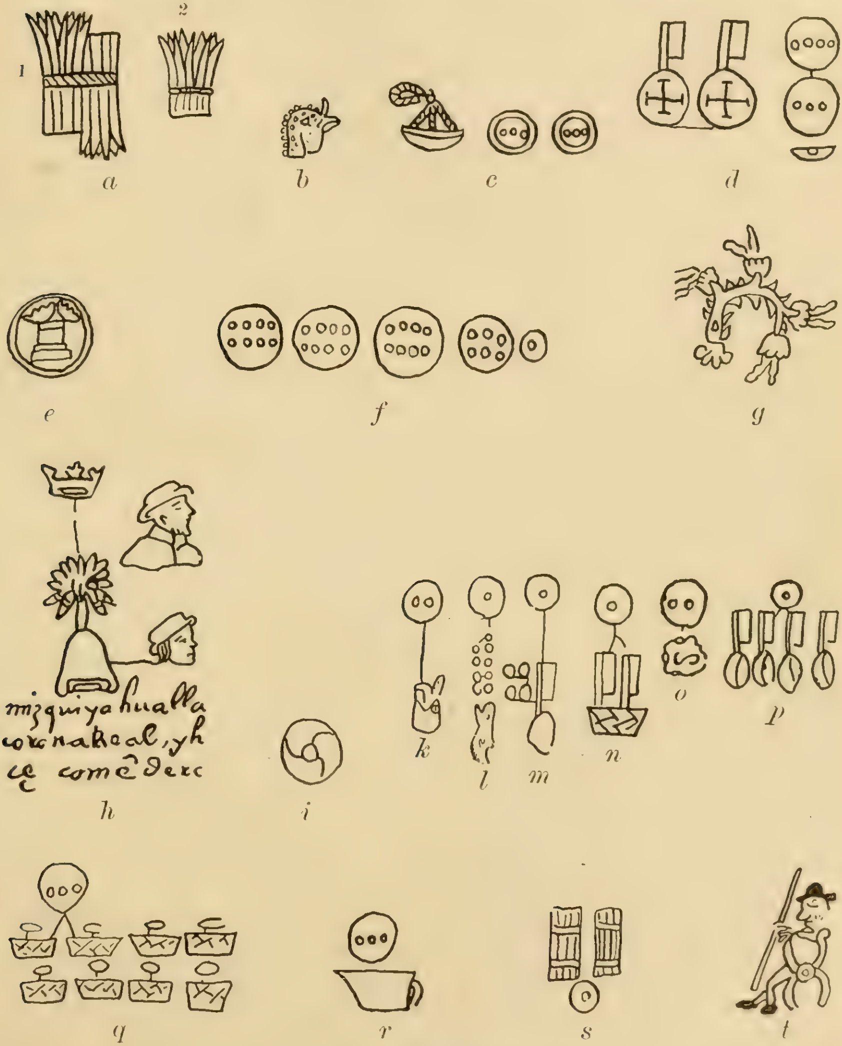


FIG. 44. Mexican symbols of various objects.

In the topmost row (on Sunday) there is a turkey, the Sunday roast, instead of the fishes. For the better understanding of the somewhat crude drawing I have reproduced in *b*, figure 44, the rather more carefully drawn head from the Goupil-Boban atlas, plate 27, which is there expressly mentioned in the text as "gallina de la tierra".

Above these objects, which represent food for man and beast, are various figures: Small flags which designate the numeral 20 and groups of small circles, each of which means 1, and also larger circles, which are either empty or contain one or two small circles (plate XII).

These large circles, which in the more carefully drawn manuscripts are always painted blue, signify money, silver coin, and in respect to this there is indeed an unvarying style of designation observable. The old Spanish coin was the peso, which was divisible into 8 reals, known in Mexican as tomin. Half a real was a medio, and half of that a quartillo. The Indians divided the latter once more. For this smallest fractional coin there is no Spanish name, only the Mexican tlaco, "half". The peso was sometimes represented in Mexican paintings by the scale pan of a balance, answering to its name, "weight", (*c*, figure 44), but usually by a blue circle with a cross on it, *d*, apparently from the stamp which at that time was impressed upon silver money. It is very rarely that any other stamp occurs (see, for instance, *e*, from the Osuna codex, pages 30 [492] and 31 [493]). Reals, or tomines, were designated by a blue circle, containing as many small circles as there were reals to be represented. Usually not more than four small circles were inscribed within one circle, that is, 4 reals, equal to half a peso. Only, when the pesos were not specially mentioned, but, as often happened, and in spite of the new dollar and centavo system still often happens, the sum was reckoned in reals, then we find within the blue circle as many as eight small circles (see *f*). The medio, on the contrary, was designated by a real cut in halves (see *d*). Thus *c* (Osuna codex) is explained in the text as 1 peso ypan 6 tomines, 1 peso and 6 reals; and *d*, taken from the same manuscript, as ompohualli pesos ypan 7 tomines ypan medio, that is, twice 20 pesos, 7 reals, and 1 medio.

In our fragment VII (plate XII) the price of the turkey (quaxolotl, guajolote) in the top row has the highest number of figures; for it is marked 2 reals. All the rest are marked 1 real. For this reason the large circles seem to be used here very often alone, without the small inner circles. According to the prices noted here, 2 bundles or loads of zacate, 20 tortillas, and 8 fishes were sold, respectively, for 1 real. The fishes can not, therefore, have been of any great size.

Since, therefore, we find days set down on our fragment VII, and within the days provisions and fodder with their prices, it is clear that this fragment must be a bill. This is proved by the writing which I had the pleasure of discovering on the reverse of the paper after having separated the leaf from its backing. These words are written there:

Resebí yó micuel mayordomo de la comunidad deste pueblo de misquiaguala del señor manuel de olvera dos pesos q. monto en comida desta pintura en quatro de fevrero de mill y q^s. y setenta y un años.

MIGUEL DE SANC JU^o.

ante mi
Juan de p ——.

("I, Miguel, major-domo of the community of this village of Mizquiyauallan, received from Señor Manuel de Olvera 2 pesos, the price of the provisions, which are here depicted, on February 4, 1571.

MIGUEL DE S. JUAN.

Before me,
Juan de p ——.")

(I can not wholly decipher this signature.)

The village of Mizquiyauallan lies in the district of Actopan of the state of Hidalgo. The name means "where the mesquite trees (algaroba, Prosopis juliflora) stand in a circle". It is therefore represented hieroglyphically by a mesquite tree bent in the shape of the bow (see *g*, figure 44), but occasionally merely by a mesquite tree, or a mountain with a mesquite tree upon it, *h*. The place was in the Otomi territory and was early subject to the Mexican kings. On the tribute list it is in the group Axocopan between the towns of Tezcatepec and Itzmiquilpan. In the Pintura del Gobernador, Alcaldes y Regidores de México (Osuna codex), it is mentioned with these and other places in the same region, but Mizquiyauallan was subject to double authority, for it was a domain of the crown and had an encomendro besides (see *h*, taken from the manuscript just named, where this double relation is expressed by the crown over the hieroglyph and the head of a Spaniard beside it). The major-domo who signed the receipt quoted above was no doubt responsible to the crown.

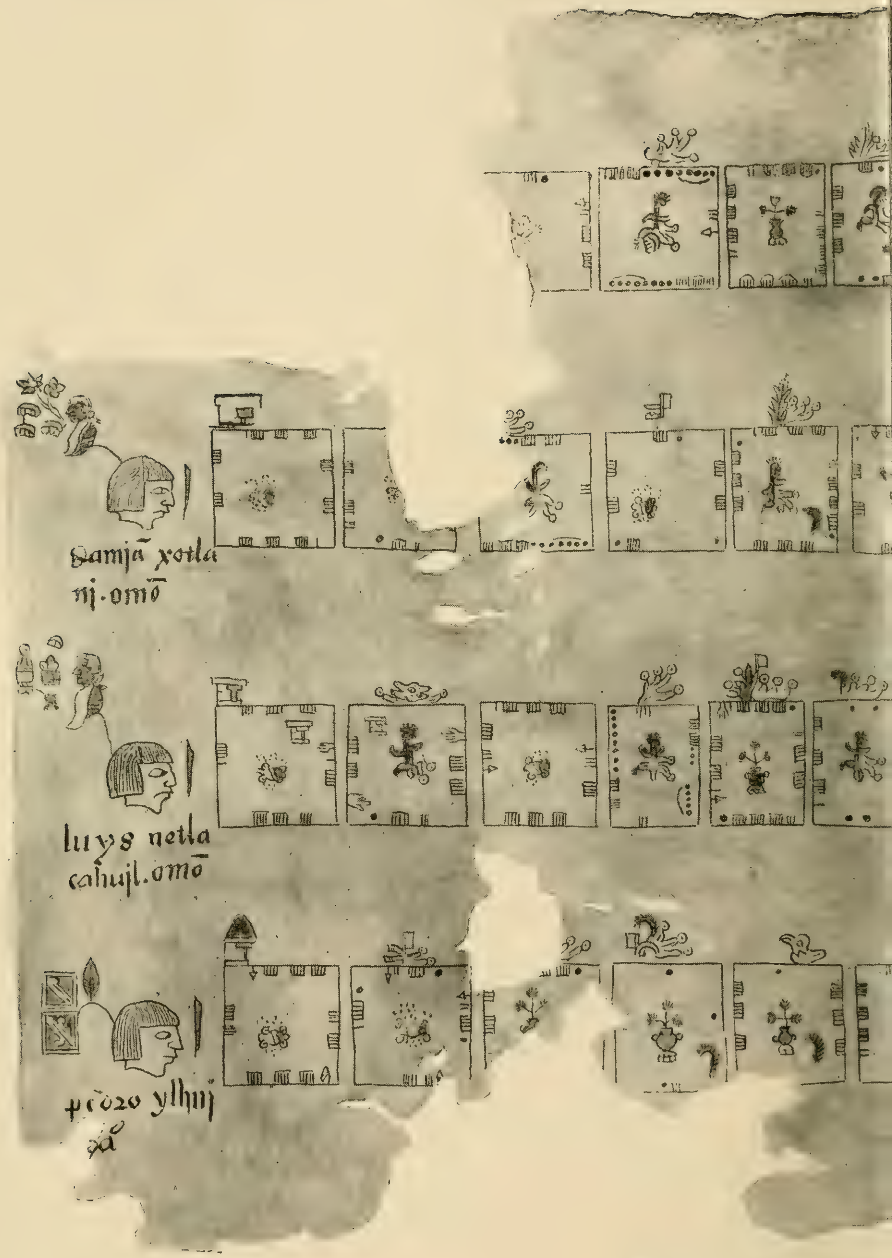
As for the persons themselves, I can not decipher the name of the official in whose presence the act was executed. In *a* and *b*, figure 47, I have reproduced the signatures of the witness and the receipting major-domo from tracings which I made. We shall later meet again with the Manuel de Olvera mentioned in the text. The major-domo was undoubtedly an Indian. Family names like this, borrowed from a saint (or a diocese?), are often encountered in the lists of names of persons.

I would draw attention to the fact that the sum of 2 pesos, mentioned in the receipt, is the actual amount obtained if we add the reals marked on fragment VII (plate XII). In the lowest row there are 5, in the second 3, in the third 5, and in the fourth again 3; in all, 16 reals or 2 pesos.

I shall show later that another page of our collection, fragment VIII (plate XIII) can be proved to have come from the same village. This latter fragment, as I shall show later on, is most closely related to one of the manuscripts which passed from the collection of the Hon Joel R. Poinsett, former minister to Mexico from the United States, into the possession of the American Philosophical Society in Philadelphia, and was published in the Transactions of that society (new series, volume 12, 1892, article 4). It is interesting to note that our fragment VII (plate XII) should also find its exact parallel in a piece in that collection. The latter is designated by the editors as Tribute Roll (Calendar 2). Here, too, the page is divided by horizontal lines into a series of consecutive divisions. On the right is a day, invariably designated by a disk, Sunday by a red disk with a three-armed verticillate design (*i*, figure 44). Then follow various articles of food, with their prices; but the bill of fare is somewhat enlarged. Besides turkey, painted red (*k*, same figure), fish (*l*), a little basket of tortillas (*n*), and bundles of zacate (*s*), we have in *p* still another cheap article of food, of which eighty are marked at 1 real, but to which I can not at present give a name; in *q* we apparently have baskets of tamales (a kind of dumpling with a filling, which was steamed in a wrapper of corn husks), eight of which were sold for 3 reals; in *m*, some articles of food painted red, possibly chile con carne, four of which cost 1 real; in *r*, a fanega of Indian corn for 3 reals (see *p* and *q*, figure 46); and in *o*, an article of diet with which I am unacquainted, which was sold for 2 reals. Finally, in two squares there are figures of Spaniards (*t*, figure 44). It seems highly probable that this page belongs to the same date and same region as our fragment VII (plate XII). It is very probable that our fragment VII (plate XII) likewise once belonged to the Boturini collection. The catalogue of Boturini's Museo Indiano mentions under number 1, section 21: Tres mapas en papel Indiano como faxas. Tratan de los tributos que pagaba el pueblo de Mizquiahuállan, y en el se vèn las cifras numéricas de cada cosa que entregaban los vecinos ("Three maps on Indian paper like strips of ribbon. They treat of the tribute paid by the village of Mizquiahuàllan, and in them are the numerical figures of everything which householders furnished").

FRAGMENT VIII

This is a strip of agave paper, 33 cm. long, 22 cm. wide, much injured at the edges and in the middle by folding, and imperfect at the upper left corner (plate XIII). On the upper side of the fragment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nj.omō
luys netla
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pedro ylhuj
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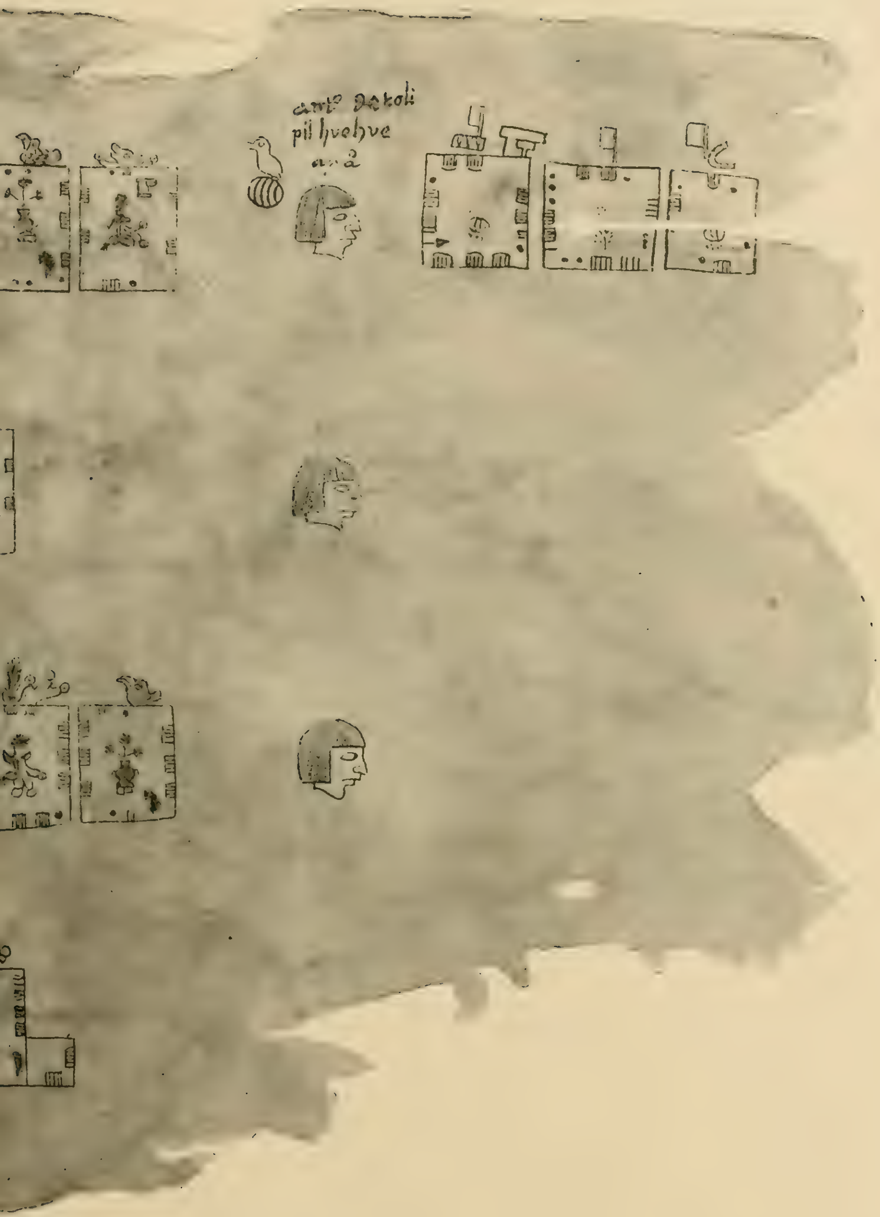
MEXICAN PAINTING—HU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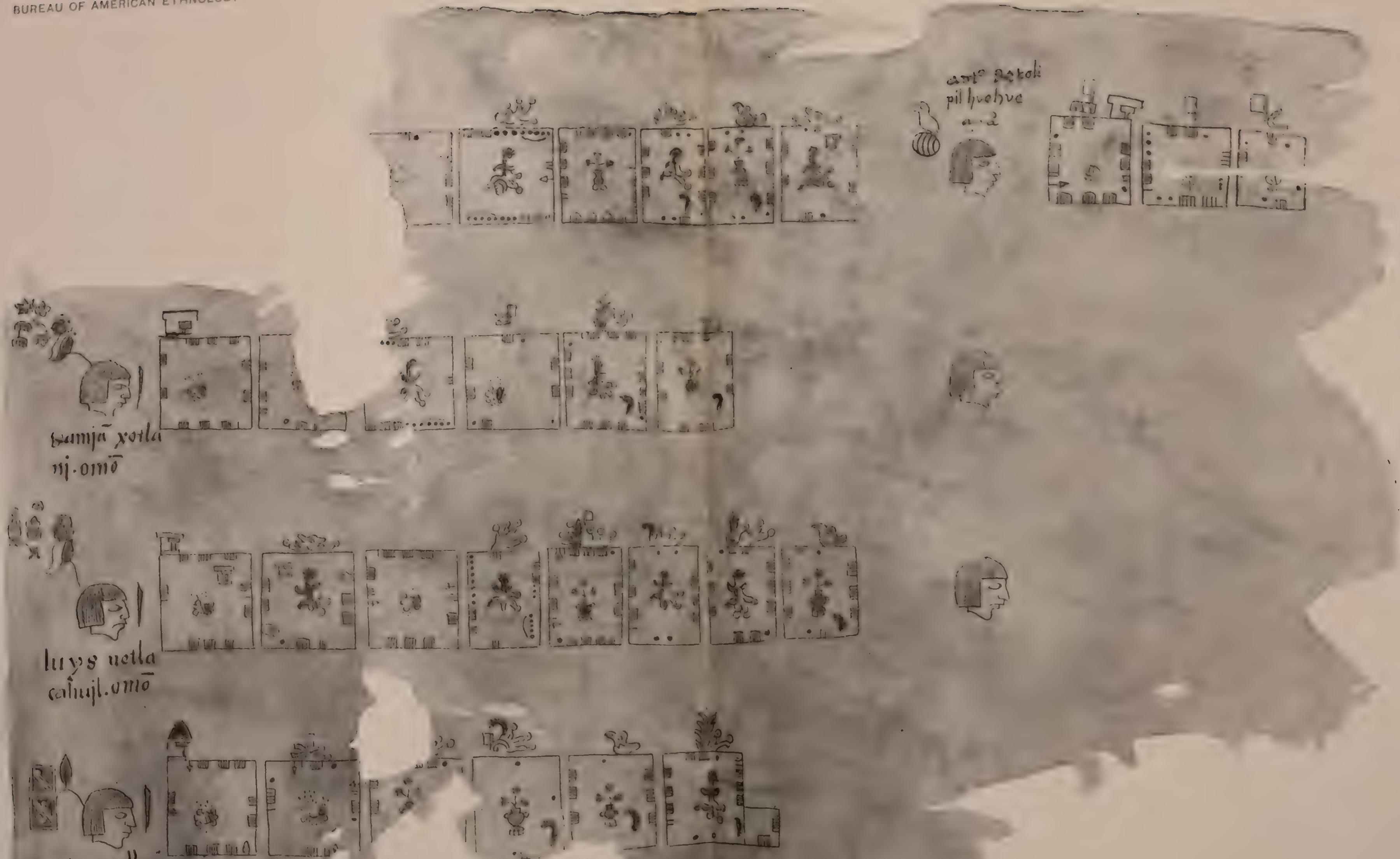
OLDT FRAGMENT VIII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MEXICAN PAINTING—HUMBOLDT FRAGMENT VIII

there are drawings, done with a fine pen, most of which are touched up with colors. On the left side are heads of men. Behind each is a hieroglyph, which gives the name of the man in question, and in front of each is the wooden implement used for field work, known as uictli, or couauacatl (see *t* and *u*, figure 37). These persons are thus marked as husbandmen. Before each person is a row of fields with quadrangular boundaries, on the sides of which are numbers similar to those which we encountered on fragment VI (plate XI). The numbers on the opposite sides of the fields, as far as can be determined, are alike, except in some minute particulars. This shows that these were meant for pieces of arable land with quadrangular boundaries. There are hieroglyphs on the upper boundary and on the surface of the fields which are repeated in the different rows. In some of the fields, in the lower right-hand corner, there is also a representation of grass (zacatl), painted yellow (see *a*, figure 36), and on the last field of the first row, in the upper right-hand corner, is the picture of a house (calli), and also in the first and second field in the third row. Finally, the name of the respective person is written with a coarse pen beside each head. From the character of the drawing and the structure of the hieroglyphs this fragment (plate XIII) resembles most closely the so-called Vergara codex. That is a manuscript mentioned by Boturini in his Museo Indiano, now in the Aubin-Goupil collection, consisting (originally) of 56 pages, which gives the statistics of the villages of Calcantlaxiuhcan, Topotitlan, Patlachiuhcan, Teocaltitlan, and Texcalticpac. The heads of families and their descendants are set down first, then lists of the persons in each village (tlacatlacuilolli), the lands claimed by individuals (milcocolli), and of what was allotted to individuals at the time of the adjustment (tlauelmantli). On the first (originally the second) page the remark "1539, marques del valle virey" has been added evidently later, by another hand. But this note has probably as little value as those added on pages 21 and 22, where a certain Don Augustin de Rosas asserts his claim to the estates of Tzilaquauhtepoztlanallan. At the end stands the name Pedro Vasquez de Vergara, possibly the name of some one who had the manuscript in his possession. The manuscript has usually been cited under his name since Aubin's time.

On those pages of that manuscript which treat of the distribution of lands the heads of persons, with their names and hieroglyphs, are depicted in exactly the same way as on our fragment VIII (plate XIII), and beside them, in rows, are the fields, those claimed by them or those which were assigned to them (Goupil-Boban atlas, plate 39. See *a*, *b*, and *c*, figure 45, which are taken therefrom). In the Vergara codex the numbers which give the dimensions are placed on only one of the long, vertical, and on one of the short, horizontal, sides of the fields, and there are hieroglyphs only in the middle of the fields, but not, as on our fragment VIII (plate XIII), on the upper boundary as well.

There is still another document on the left side of which persons are depicted and, opposite them, the fields belonging to them, in the same way as in our fragment. This is page 34 of the Goupil-Boban atlas. Here, too, as in the Vergara codex, the dimensional figures are on only two sides of the square. But, as in our fragment (plate XIII), hieroglyphs are drawn on the upper boundary of the fields, or beside it, and there are additional designations which make it evident that these hieroglyphs represent the name of the field or piece of arable land.

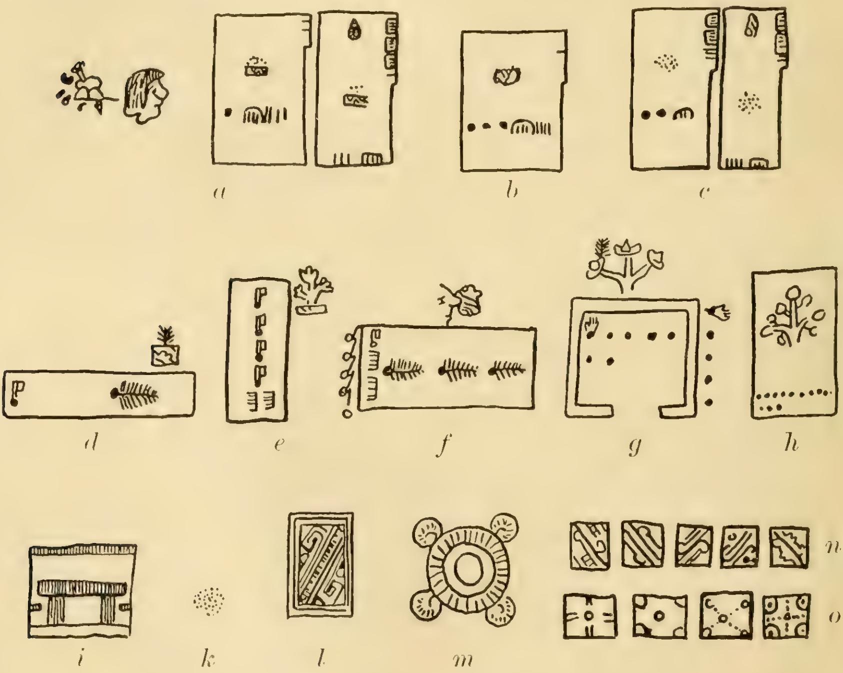

FIG. 45. Mexican glyphs denoting various objects.

Moreover, the word chinamitl, "inclosed field", or milli, "arable land", is often quite superfluously written beside them (see *d*, *e*, *f*, figure 45).

Comparison with these manuscripts, I think, leaves no room for doubt as to the general meaning of our fragment VIII (plate XIII). I will now resume the discussion of its separate features.

The dimensional numbers, which are written on four sides of the fields, are, as I have already said, the same on the two opposite sides. Their construction and characteristic features are exactly the same as those which we have already seen in the plan of the city of Tezcuco on fragment VI (plate XI) of our collection. There, as here, twenties are denoted by black dots, ones by lines; groups of five ones are connected by a line; and where there are more than five twenties the first five are also connected by a line to form the number 100. We have the same system of notation in the Vergara codex, *a* to *c*, and on page 34 of the Goupil-Boban atlas, *d* to *f*, except that here the twenties are usually denoted by a black dot and a little flag, the four hundreds by a black dot and a sign resembling a pinnated leaf, which is the symbol for tzontli, " four hundred " (literally, " hair "). But on this page, too, twenties are denoted simply by black dots, *g* and *h*. On fragment VI of our collection the souls were counted. Therefore we saw, preceding the numbers, the picture of a heart (yollotli), expressive of the conception " life " (yōl) or " soul ". On fragment VIII (plate XIII) we should expect to find, preceding the figures, the picture of some unit of measure. And this is actually the case. We find, preceding the numbers, the picture of a hand. This is in the first, second, and fifth fields of the third row. But in other fields, preceding the numbers, we find a picture resembling an arrowhead. This occurs in the fourth field of the upper row (the front of which is incomplete), in the last field in the second row, in the fifth field in the third row, and in the first and second fields of the fourth row. I have interpreted this picture, from its appearance, to be an arrowhead. That it is actually intended for one is, in my opinion, fully proved by the fact that in the first field of the fourth row the arrowhead, which we see on the upper side, is replaced on the lower side by the hieroglyph tecpatl, " flint ", that is, by the material from which arrowheads were made.

We also find the hand as a unit of length on page 34 of the Goupil-Boban atlas, where the dimensions of the estate or village of Tzompantitlan are given (see *g*, figure 45).[a] The hand as a unit of measure is readily understood. For ma-itl means not only the hand, but also the arm, the forearm, including the hand. The use of the hand, therefore, might denote either an arm's length or an ell. In fact, Molina's vocabulary gives cem-matl (literally defines, " an arm ") by " una braça para medir ", that is, an ell. I have not found the arrow elsewhere as a unit of length. But that it was actually used as such is again proved by Molina's vocabulary, where we find cem-mitl, " an arrow ", translated by " medida desde el un codo hasta la otra mano ", that is, the measure from one elbow to the tip of the other hand, a somewhat longer measure, therefore, than the former, equal to about 2 ells. I think it possible, however, that the two symbols, the hand and the arrow, both refer to one and the same customary unit employed to measure distance.

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[a] Let me draw attention, in passing, to the interesting form which this hierolglyph has here. The element tzompan is usually expressed by the wooden framework tzompantli, upon which the heads of the sacrificed victims were exhibited. But here it is expressed by the tree tzompanquauitl (Erythrina corallodendron).

As for the hieroglyphs, those on the upper side of the fields undoubtedly stand for the names of the boundaries of the land. They are repeated in the separate rows of fields belonging to one owner, because they do not denote the individual field, but the domain within which it lies. In exactly the same way, on page 34 of the Goupil-Boban atlas, the same names of domains recur above and beside the fields which are set down in rows after the various owners. In our fragment eight different domains seem to be given.

The first one is the same in all the rows (plate XIII) and is designated by the picture of a house above the field. The house in the fourth row is drawn with a high, pointed, straw roof (painted yellow), that is, like the xacalli, which we saw in fragment II (plate VII). The others are apparently meant to represent the adobe houses with flat roofs of beams, known as tlapechcalli (see *i*, figure 45, taken from page 34 of the Goupil-Boban atlas). The layer of beams forming the roof is marked here by red paint, like doorposts and the frames of doors, which were always made of wood[a] and were therefore always painted red or brown.

The second field in the third row (which is the most perfect) has a hieroglyph at the top which represents the head of a coyote between two streams of water. This domain may, therefore, have been called Coyoapan. The name of this domain is set down over the last field in the first row.

The third field in the third row has no hieroglyph at the top. Perhaps the same one should be here which is over the fourth field in the second row and over the second field in the fourth row, and also over the third field in the row to the right of the fragment (plate XIII). It consists of a flag and two rows of teeth. The name of the domain may have been Pantlan or Pancamac. Over the second field in the fourth row there is a stream of water in addition to the flag.

The hieroglyph over the fourth field in the third row is somewhat effaced; but I think that it is meant for the same hieroglyph that is over the fourth field in the first row, and over the third field in the second row, which consists of the picture of a hand and a stream of water. The same hieroglyph probably occurred also over the third field in the fourth row. In its place there is a hole in the page, and the edge of the paper is somewhat turned down; but the stream of water belonging to this fourth hieroglyph is still plainly discernible under the turned-down edge.

The fifth field in the third row has above it a hieroglyph, which occurs nowhere else in what is preserved of the other rows. It consists of a fruit tree, a small flag, and a stream of water.

The hieroglyph over the sixth field in the third row consists of the symbol zaca-tl, "grass" (painted yellow), and a stream of water.

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[a] See J. Bautista Pomar, Relacion de Tetzcoco, manuscript.

It is evidently the same hieroglyph as that over the fourth field in the fourth row, which, in addition to the grass and water, has also a set of teeth (tlan-tli, "tooth") and a small flag (pan-tli).

The seventh hieroglyph occurs in all four rows. It is over the sixth field in the first, the fifth field in the second, the seventh field in the third, and the sixth field in the fourth row. It consists of a green bush and a stream of water.

The eighth hieroglyph likewise occurs in all of the four rows: in the seventh field of the first, the sixth field of the second, the eighth of the third, and the fifth field of the fourth row. It is the picture of a bird.

Another separate domain may possibly be designated over the second field of the row on the unfinished right side. A small flag is recognizable. Whatever else may have been there is now obliterated. We see, then, that the hieroglyphs over the fields, which, it seems tolerably certain, represent the names of the domains, exhibit a considerable variety. We have been able to count eight or nine of them. Of the hieroglyphs on the surface of the fields, only three kinds can be distinguished, which, as will appear immediately, must have been intended to express various qualities of soil.

The first presents the hieroglyph te-tl, "stone", and a series of fine dots proceeding from it, undoubtedly indicating sand (xalli). (See *k*, figure 45, xalpan milli, that is, the arable field, xalpan, "in the sand"; Goupil-Boban atlas, page 34.) This hieroglyph, then, would denote stony, sandy soil, which the Mexicans called tetlalli xallalli.

The second hieroglyph which we see, for instance, in the second field of the third row, shows the picture of a maize plant (toctli). with the tassel (painted yellow) at the top and the ear (painted red) having long drooping bunches of silk lower down at the left of the stalk. Beside it, on the right, is a stream of water (a-tl) and below it a row of teeth (tlan-tli). These three elements together give the word atoctlan, that is, "rich in a-toctli (fertile vegetable mold)." Compare Sahagun, volume 2, chapter 12, section 3: A la tierra fertil para sembrar, y donde se hace mucho lo que se siembra en ella, llaman a-toctli, que quiere decir, tierra que el agua ha traido: es blanca, suelta, hueca y suave; es tierra donde se hace mucho maiz ó trigo ("earth fertile to sow seed in, and where that which is sowed increases greatly, they call a-toctli, which is to say, earth which the water has brought: it is light, loose, rich, and smooth; it is earth which produces much corn or wheat"). It is, however, possible that the row of teeth here is not meant to express the whole syllable "tlan", but only "tla", in which case it might stand for tlalli, "earth", so that we should have atoc-tlalli. This seems to me probable on account of what follows.

The third hieroglyph, which occurs, for instance, in the fifth field of the third row, shows at the top a tree (quau-itl), below it a jug (com-itl), and below that the row of teeth (tlan-tli); these elements give us the word quauh-con-tlan, or quauh-con-tlalli, and the latter may perhaps be resolved into quauhtlalli, contlalli. Quauhtlalli is wood soil. Sahagun says, volume 2, chapter 12, section 3: Hay otra manera de tierra fertil, donde se hace muy bien el maiz y trigo, llámanla quauhtlalli, que quiere decir, tierra que está estercolada con maderos podridos, es suelta, amarilla, y hueca ("there is another sort of fertile soil, in which corn and wheat flourish very well, they call it quauhtlalli, which is to say, earth which has been manured with rotten wood, it is soft, rich, and golden"). And contlalli is clay. Sahagun says, volume 2, chapter 12, section 5: Hay barro en esta tierra para hacer loza y basijas, es muy bueno y muy pegajoso; amásanla con aquellos pelos de los tallos de las espadañas, y llamase texoquitl y contlalli: de este barro se hacen comales, escudillas, platos, y toda manera de loza ("there is clay in this earth for making tiles and pots, it is very good and very easily molded; they knead it with fibers of the shoots of reed mace, and they call it texoquitl and contlalli: of this clay they make plates, bowls, dishes, and all manner of pottery"). The same earth is described in the preceding section 3, as follows: Hay otra (tierra) pegajosa buena para hacer barro de paredes y suelos para los tlapancos; es fértil, pues se hace bien el maiz y trigo ("there is another kind (of earth) good to mold so as to make clay for walls and floors for the tlapancos; it is fertile, since corn and wheat do well in it").

The three hieroglyphs in the center of the fields would therefore denote sandy or stony soil, vegetable mold, and clayey soil. It is to be noted that the hieroglyphs on the upper side of the fields and those in the middle of the fields always have a certain regular relation to each other, that is, the various domains show a distinct quality of soil. Thus domain 1 has sandy soil; 2 has vegetable mold; 3 has sandy soil; in 4 vegetable mold is given in three cases, but in the third field of the fourth row, if it belongs to this domain, is a clayey soil; domain 5 has clayey soil; domain 6, likewise partly vegetable mold, partly clay; domain 7 has vegetable mold throughout; domain 8, nothing but clayey soil.

On the last page of the Vergara codex, the third of those pages of that manuscript which are reproduced in the Goupil-Boban atlas (plate 39), the quality of the soil in the fields is likewise stated, and it seems in every case to be partly stoney and partly sandy soil (see *a*, *b*, and *c*, figure 45).

Before every row of fields on our fragment (plate XIII), and also on page 34 of the Goupil-Boban atlas and in the Vergara codex, there is a drawing of the person who is declared to be the owner of the fields in question. These persons, as I have said, are designated plainly, not only by a hieroglyph, but also by the name written beside it. Here, therefore, it is easy to decipher the hieroglyphs. But it should be noticed that, as a matter of course, the Spanish name is not taken into account. Moreover, we must omit some letters, which stand after the names and are probably an abbreviation of a Nauatl word. After the names of the persons in the second and third row we read the syllables omo; after those of the person in the fourth row and of the one on the right of the fragment, the syllables ayaº. I am inclined to regard the latter as an abbreviation of ayamo, "not yet", and, accordingly, the former must be an abbreviation of omotlali, "he was installed", "he has been confirmed", or something similar.

The hieroglyphs are of complex structure, and the pictures employed, like those in the Vergara codex, are not always used according to the full value of their syllables, so that there is presented a phase of transition from the old symbolic and syllabic mode of writing to a kind of phonetic writing.

The first person, the one in the second row, according to the explanatory note, bears the name Damian xotlanj. The hieroglyph is composed of some flowers, two rows of teeth, and the figure of a sitting man. The flowers (xoch-tli) give the syllable xo; the teeth (tlantli), the syllable tlan. The seated man I take to mean omotlalli, "he was installed", into which, as I said, the omo after the name xotlani should be expanded.

The second person, the one in the third row, bears the name Luys Netlacahuijl. The hieroglyph shows us a doll, a row of teeth, a basket of tamales (filled dumplings made of Indian corn), and a utensil like a skillet. Beside it is the same seated figure. The doll (nenetl) gives the syllable ne; the teeth (tlan-tli), the syllable tla. The tamales and the skillet, which is doubtless supposed to be filled with chili, or red pepper, sauce give the syllable cauil. Nino tlacauilia (derived from caua, "to stay behind") means "I keep something for myself", or "I am taking a meal"; netlacauiliztli, "the meal (merienda)". The person seated is again to be taken as an expression of omo, that is, omotlali, "he was installed".

The name of the person in the fourth row is Pedro Ylhuj. The hieroglyph is a remarkably conventionalized repeated verticillate figure in bright colors, red and yellow with a blue diagonal part, and a yellow feather. Here the yellow feather probably denotes an element not expressed in the name as it is written. The man's name may really have been Ilhuitoz, for toztli is the yellow parrot feather (or one artificially dyed yellow). The front part consists of two squares, each of which shows two little tongues put together after the manner of a swastika, or fylfot, which is undoubtedly meant, like *h* and *i*, figure 46, to express the word il-hui-tl, that is, "the sun's orb", "day", "festival". I drew attention to this figure some years ago,[a] but did not at that time interpret it correctly. It occurs on Mexican sculptures in the Berlin Royal Museum of Ethnology (*l*, figure 45) on the piece opposite the picture of the chalchiuitl, the luminous, brilliant bead of jadeite. This simple verticillate symbol (*n*, same figure) also occurs on the celestial shields in Maya manuscripts in connection with all sorts of variants of the sun hieroglyph, *o*.

The last person on the imperfect right side of the fragment is called, in the accompanying note, Antonio Totoli Pilhuehue. Totol i-pil means "the young turkey", and this is expressed in the hieroglyph by the picture of a bird with short wings. But I am not clear as to the other element below it or what syllable it is meant to express.

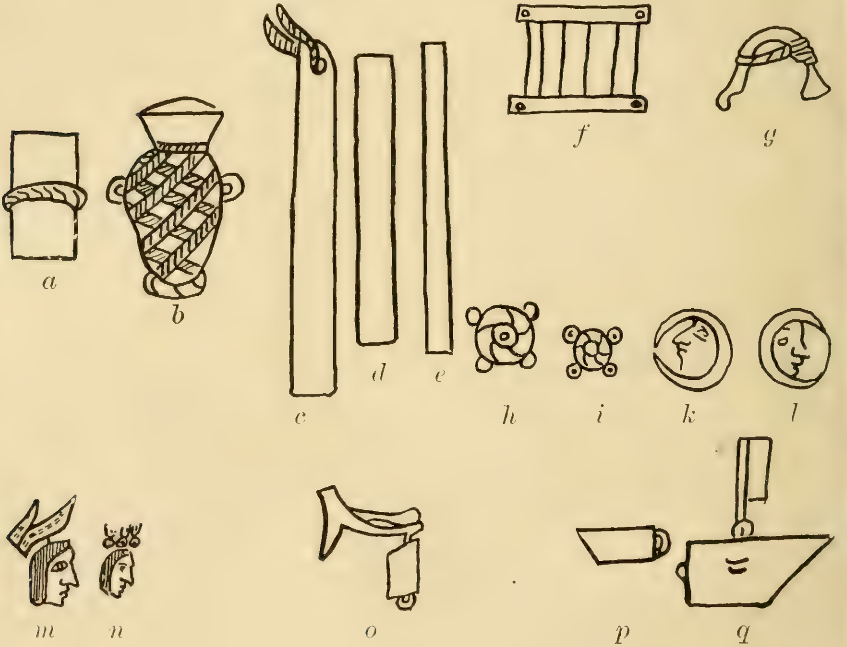

FIG. 46. Mexican symbols for various articles.

From all that we can make out and determine on fragment VIII (plate XIII), it is perfectly obvious that it is very closely analogous, on the one hand, to our fragment VI (plate XI) and, on the other hand, to page 34 of the Goupil-Boban atlas and the so-called Vergara codex. The most striking characteristic of all these manuscripts is the peculiar system of notation—the ones being denoted by marks instead of dots and always combined in groups of five—and also the complicated

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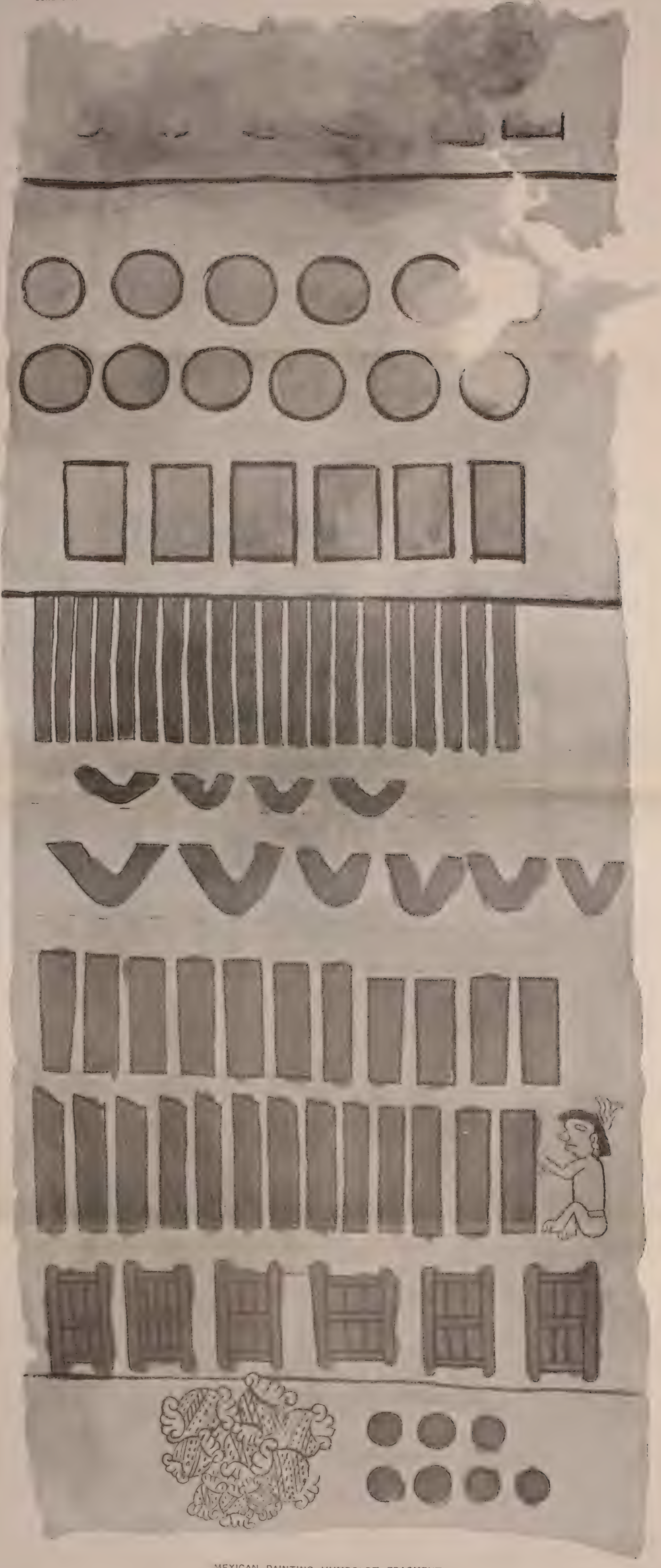
[a] Zeitschrift für Ethnologie, 1888, v. 20, pp. 53 and 55.



MEXICAN PAINTING—HUMBOLDT FRAGMENT IX

composition of the hieroglyphs, which approximates syllabic and phonetic writing. All the manuscripts of this kind seem to have originated within the boundaries of the ancient kingdom of Tezcuco, and it seems that this local element, rather than the time of their origin, ought to be taken into account in explaining these peculiar features, for the Pintura del Gobernador, Alcaldes y Regidores de México (Osuna codex), which is later than our fragment VI (plate XI), counts with dots instead of marks. We know that Tezcuco was anciently regarded as the seat of refined culture and of a certain kind of scholarship; but Tezcuco was also the first to adapt its native elements, in a certain measure, to the customs and civilization of the foreign conqueror. As long, therefore, as the same peculiar features occur in the manuscripts quoted (Vergara codex and others) in genuine old pre-Spanish documents I shall still incline to attribute this development to the Spanish period. For this reason I can not consider these documents of the great importance which Aubin and others attach to them.

FRAGMENTS IX, X, XI, AND XII

These four fragments are alike in character. Fragments IX (plate XIV) and X (plate XV) evidently were once a single strip, as were also fragments XI (plate XVI) and XII (plate XVII). Fragments X (plate XV) and XII (plate XVII) have a line across the top, cut with a sharp instrument; in XII (plate XVII) the cut follows a line drawn across the fragment, parts of which are to be seen at the bottom of fragment XI (plate XVI). The strips are all of the same width, about 17 cm. Fragments X and XI (plates XV and XVI) together are 98 cm. in length, which is therefore the length of the whole strip originally. Fragments XI (plate XVI) and XII (plate XVII) together are 146½ cm., the original length of the second strip. The first strip was once longer above. There are still faint traces of drawings there. The second strip seems to have been cut off sharply at the bottom; moreover, one corner has been cut out with the scissors. It would seem, then, that this strip was also longer. The drawings are done in ink with a coarse pen, and decidedly resemble the illustrations on fragment XV (plate XX), and also somewhat those of ecclesiastical subjects on fragment XVI (plate XXI). The colors used are crimson and yellow, while for the stone wall on fragment XII (plate XVII) a blackish ink has been employed. The circles and squares in the lowest division of fragment IX (plate XIV) are painted crimson. So, too, are the tubs which the three rows of Indians in the upper division of fragment XI (plate XVI) carry on their backs, the transverse rows over and under them, and the hat, coat, and footgear of the

Spaniard; so also is the carpenter's ax on fragment X (plate XV). All else, if colored at all, is painted yellow.

As for the general character of this manuscript, the figure of the Spaniard, on fragment XI (plate XVI), who is pulling two Indians along by a rope and the four Indians, on fragment X (plate XV), who, with their hands bound behind their backs, hang upon a sort of gallows, show that this is a bill of complaint. The Indians enter complaint of oppression on the part of the Spaniards of ill treatment, work unjustly required, and of supplies unpaid for. This is therefore a document similar to the Pintura del Gobernador, Alcaldes y Regidores de México, which was discovered in the archives of the Duke of Osuna. But our manuscript unfortunately is not provided with text; therefore a degree of uncertainty will always attach to the interpretations.

Among the various illustrations, I will first draw attention to the one at the top of fragment XI (plate XVI). Here we see the head of an Indian and behind it his hieroglyph, a white roll, probably meant to represent paper (amatl) (see *a*, figure 46, from the tribute list in the Mendoza codex, page 27, and described in the text as "papel de la tierra"). After this comes a house, with walls evidently supposed to be built of reeds, like the xacalli in the lower part of fragment II (plate VII). But the roof is different. It looks as though there had been an attempt to draw the prickly point of an agave leaf on the house. These sharp points of the agave leaf were called uitztli, "thorn", and uitztli, or uitzoctli, "pricking pulque", was also the name given to newly fermented pulque, the intoxicating drink prepared from the juice of the agave.[a] That there is here a reference to something of the kind appears from what follows the house in the drawing. We see there three jugs with basket-work covering, furnished with straw or rope handles.

This illustration is valuable in itself, as it incidentally throws light upon the locality and the outward circumstances. We are forced to conclude that there is a reference here to occurrences on a pulque hacienda. Furthermore, we learn from the jugs on fragment XI (plate XVI) that the peculiar design to be seen on them and similar objects represented on these fragments (an unpainted white border with a stripe running through it on one side) is meant for the mouth of a vessel. The artist may have had in mind a vessel with a sort of lip or spout which was formed by narrowing the mouth at one side. We find the same design on the two transverse rows of red, four-cornered objects corded with ropes, which are represented in the upper portion of fragment XI (plate XVI), as well as on the similar objects painted yellow to be seen in the two transverse rows at the

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[a] Sahagun, v. 4, chap. 5.

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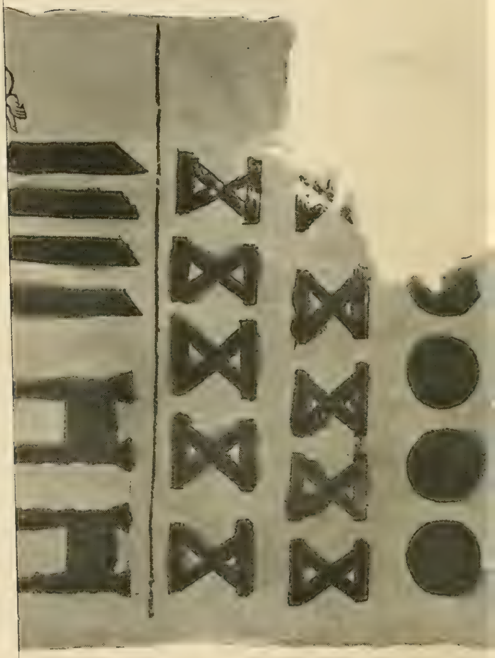

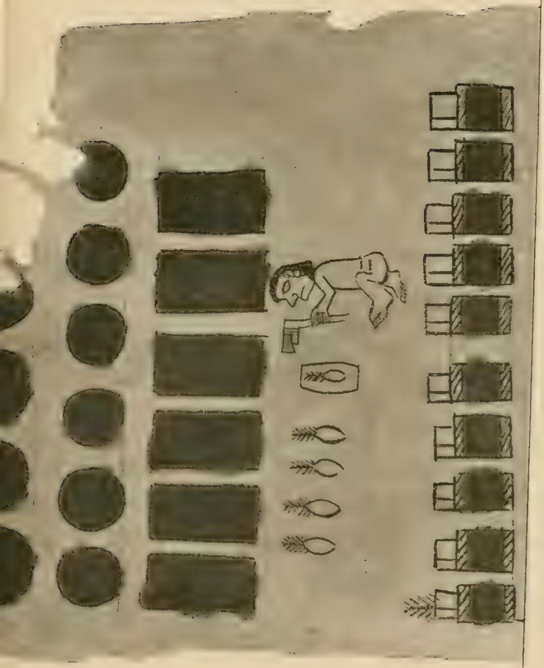

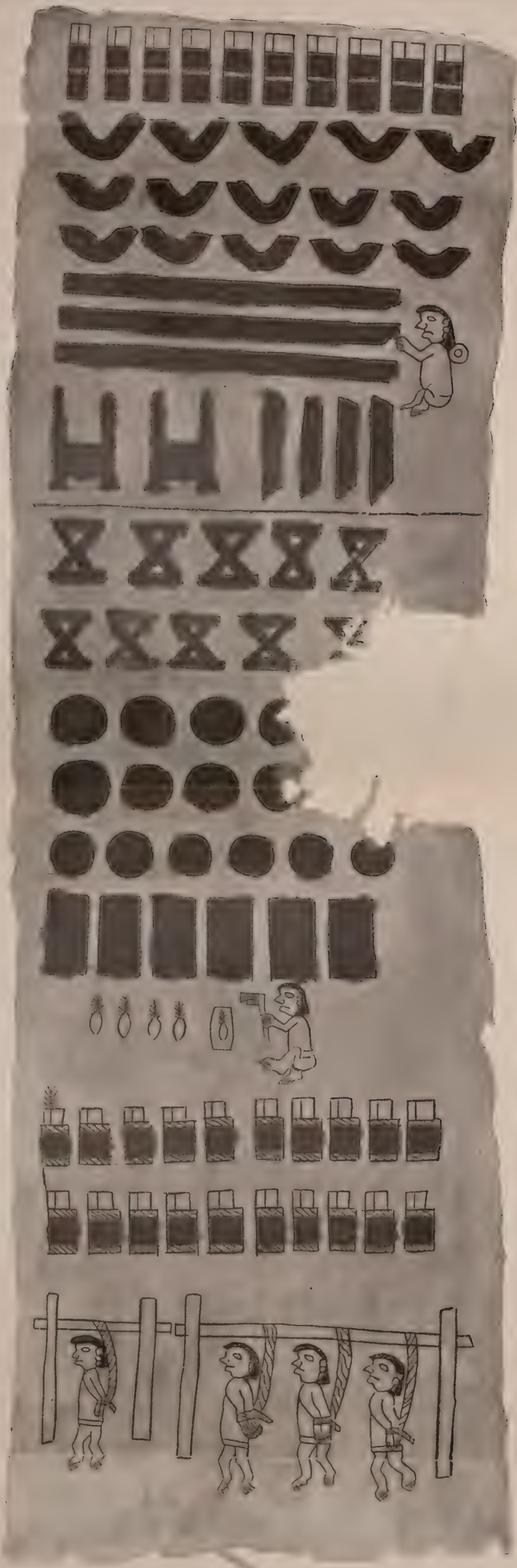

MEXICAN PAINTING—HUMBOLDT FRAGMENT X

bottom of fragment X (plate XV) directly above the Indians hanging on the gallows; furthermore, I believe that these and the four-cornered objects made of yellow staves and corded round the middle, shown at the top of fragment X (plate XV), are all meant to represent vessels, namely, wooden butts or casks for pulque or brandy. I think that I see further proof of this in two other facts: in the first place, because, as we shall see, the delivery of wood and of wooden utensils is noted elsewhere on our fragment; and, further, because we find a snake above the objects which I have explained to be butts or casks—the red ones at the top of fragment XI (plate XVI). The snake was often introduced into ancient pictures when pulque jugs were to be represented. The ring or base on which the pulque jug stands is most frequently formed of the coils of a snake.

The three rows of Indians on fragment XI (plate XVI) with sticks in their hands carrying on their backs tubs which are bound to a ladderlike frame (cacaxtli), would illustrate the transportation of pulque, which labor the Spaniards imposed upon the Indians. In the same connection I am inclined to believe that the two Indians on fragment XII (plate XVII) with great pots upon their backs are meant to represent the bringing or transportation of condensed agave juice (see *b*, figure 46), which is in the tribute list, Mendoza codex, pages 29 and 77, and explained in the text as miel de maguey espesa "thickened maguey honey"). The two Indians at the bottom of fragment XI (plate XVI) with the small jugs on their backs might convey the same idea, or perhaps they are bringing real honey (see the similar but smaller figure in the tribute list of the Mendoza codex, page 38, which is explained in the text as cantarillo de miel de abeja ("small jug of bee's honey").

The drawing at the bottom of fragment XII (plate XVII) is also perfectly intelligible. Here we see three slaughtered pigs. It is obvious from the shape of the hoofs that they are meant for pigs, and that they are supposed to be slaughtered is plainly indicated by the red color under the snout; but if these are pigs, then it is clear that the animal's head in the ten or eleven rows of baskets, which are bound to a ladder-shaped carrying frame (cacaxtli), on fragments XI (plate XVI) and XII (plate XVII), must likewise signify pork. If this should not be perfectly plain to anyone, I would refer him to the lowest row, on fragment XII (plate XVII), where the pig's foot is distinctly drawn in addition to the pig's head.

The great majority of other representations deal with the delivery of wood and wooden utensils. The long pieces with a hole at the end, in fragments X (plate XV) and XII (plate XVII) represent beams (see *c*, figure 46, which is explained in the tribute list, Mendoza codex, page 34, as vigas grandes—"large beams"). The smaller and more slender pieces probably represent boards and laths (see *d* and *e*, which are explained in the tribute list, Mendoza codex, pages 25 and 28, as tablones de madera grandes and morillos de madera—" large wooden planks "). The large round circles and the broad four-cornered pieces may be meant for table tops or possibly blocks of wood. Moreover, on fragments IX (plate XIV) and X (plate XV) there are drawings of pieces of bent wood; on fragment X (plate XV) two rows of seats; and on fragments X (plate XV) and XI (plate XVI), drawings which seem to be bedsteads. The objects in the row at the bottom of fragment IX (plate XIV) are probably meant for lath frames or sleeping benches, for we find very similar figures drawn on page 34 of the Goupil-Boban atlas under the name of tlapechtli, rendered tablado, andamio, cama de tablas (" framework, scaffolding, a broad bed "), Molina (see *f*, figure 46). Finally, carpentry is clearly denoted by the figure of a carpenter (tlaxinqui) with an ax (tlaximaltepoztli) in his hand (see *g*, which designates carpenters, carpinteros, in the Pinturna del Gobernador, Alcaldes y Regidores de México).

And, lastly, the delivery of stone or masonry is represented on fragment IX (plate XIV) by a heap of stones, and near the lower end of fragment XII (plate XVII) by a row of stones.

If, then, we read the details correctly, complaints are made in our manuscript, first, at the bottom of fragment X (plate XV), of ill treatment; then, of compulsory labor, at the top of fragment XI (plate XVI); and, lastly, of unjust requisitions of or failure to pay for wood and various wood articles, pulque casks, stone, and pork.

FRAGMENT XIII

This is a strip of tolerably thin fine agave paper, 49 by 31 cm. in size (plate XVIII). Only the lower half is written on, and of this only the lower portions are colored, the upper part being merely outlined, that is, unfinished, a proof that here, too, the writer began in the old way, at the lower end of the strip, proceeding upward with his entries. The lower end is imperfect; but, judging by the space occupied by the Spanish document written on the reverse side, there can not be much missing. At any rate, there was no other row beneath the lowest one.

The document is of precisely the same character as one of the manuscripts which passed from the collection of the Hon Joel R. Poinsett, formerly United States minister to Mexico, into the possession of the American Philosophical Society, in Philadelphia, and which is published in the Transactions of the American Philosophical Society, new series, volume 12, part 2, article 4 (Philadelphia, 1892), under the title Tribute Roll 4 (Calendar 1). There, as here, we see circles painted yellow alternating with red circles

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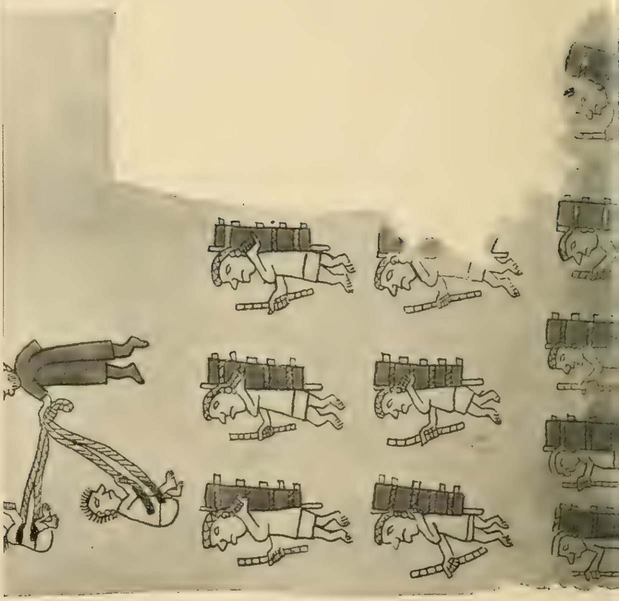
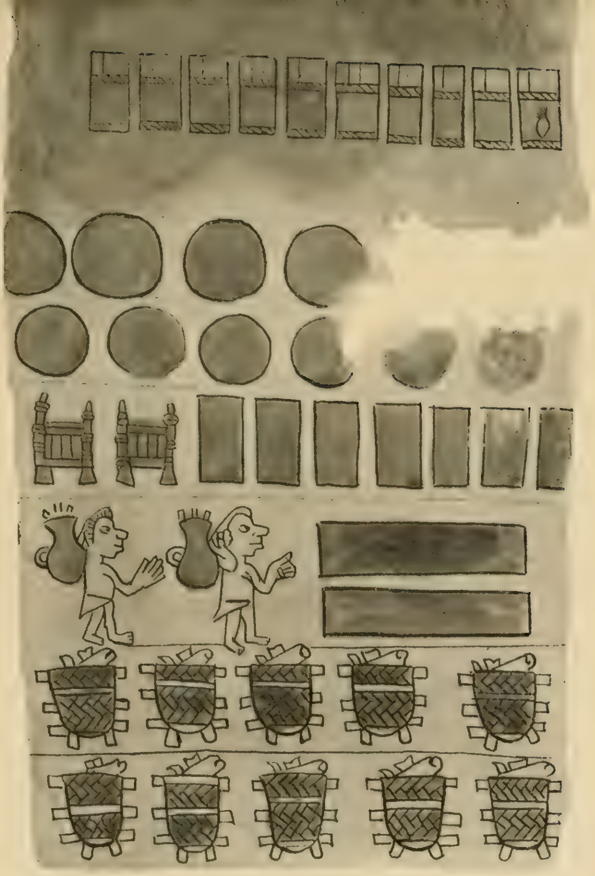
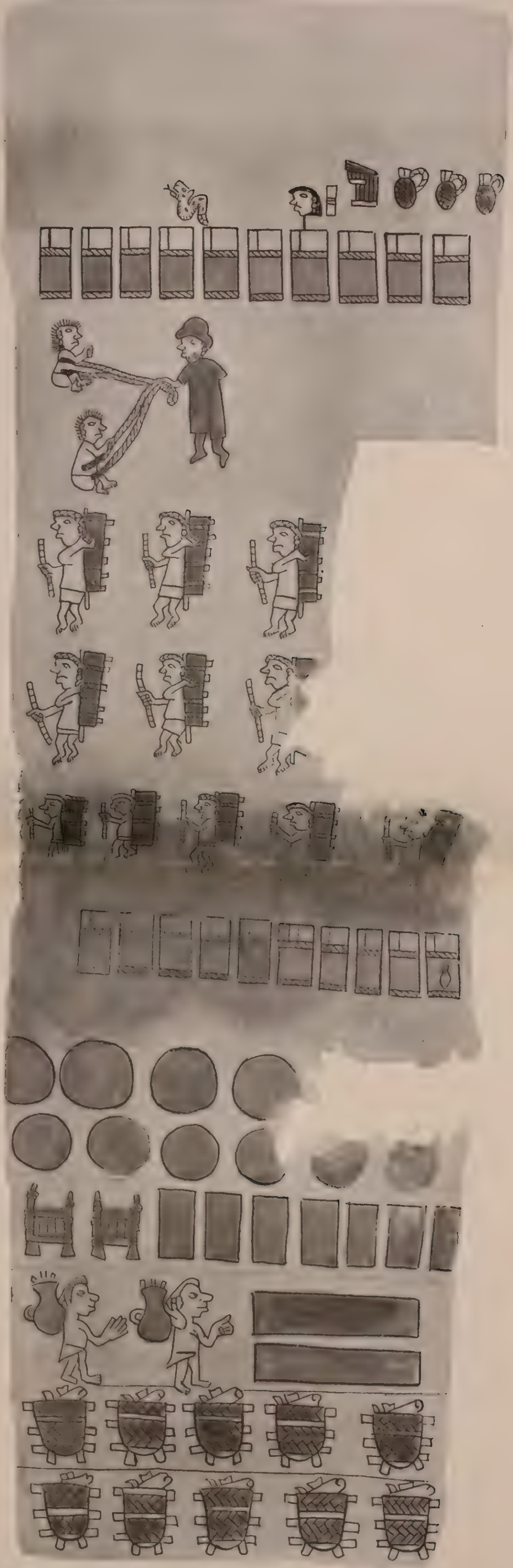




MEXICAN PAINTING—HUMBOLDT FRAGMENT XI



MEXICAN PAINTING—HUMBOLDT FRAGMENT XI

containing a verticillate drawing, a sort of swastika. There are always six yellow circles between the red ones, which is a clear proof that the yellow circles are meant for week days, the red ones for Sundays. Indeed, the whirling figure of the swastika is only a somewhat different form of the sign (*h* and *i*, figure 46) which the Mexicans used for the word ilhuitl, which meant " day ", but in a special sense " feast day ", " festival ". In the manuscript of the American Philosophical Society we must begin with the lowest row on the right, follow this to the left, and the next from left to right, and so on, back and forth. Wherever a new month begins the series of week days is interrupted by the picture of the moon, which is alternately drawn facing to the right and the left (see *k* and *l*, same figure), and is not to be included in counting the series of days. Proceeding from below upward, we have, in succession, first a month of 31 days, then one of 30 days, again 31 days, 30 days, 31 days, and, lastly, 31 days once more. This last month must, therefore, have been August or January, the first one March or August. On our fragment (plate XVIII) the sign for the first day of the month is missing. The rows are probably to be followed back and forth, as described above, as we are led to conclude by certain facts which will be mentioned below. But the true circumstances can no longer be determined because several days have been cut away with scissors from the right-hand side of the page.

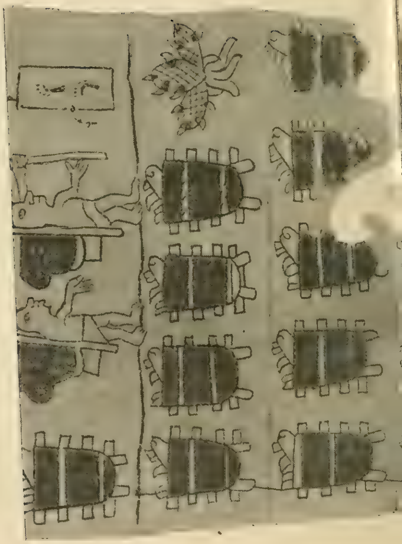
Over each separate day on our fragment there is a woman's head, recognizable by the two erect hornlike braids over the forehead—the hair dress of Mexican women (see *r*, figure 37). This can hardly mean anything else than that on the days in question women were commanded to do service. The heads are arranged over the days in pairs, facing each other, and between the two faces there is always a little flag, the hieroglyphic expression for the number 20. In the two upper rows the matter is simplified. Only one head is drawn and this is connected by a straight line with two consecutive days, the number 20 standing beside the single head. At the left end of the lowest row an odd day was left over. The woman's head is placed over this, but only the half of 20, the numeral 10, is added, and this is correct. But, in addition, this odd day is connected with an odd day at the left end of the second row from the bottom, and then, pleonastically, as it were, the numeral 20 is placed between them. All this can hardly be explained excepting on the assumption that the shifts of workers were changed every two days, that is, that different women came every two days. But the fact that the writer passed from the left end of the lowest row to the left end of the next higher proves that he began at the right-hand lower corner, as in the case of the document of the American

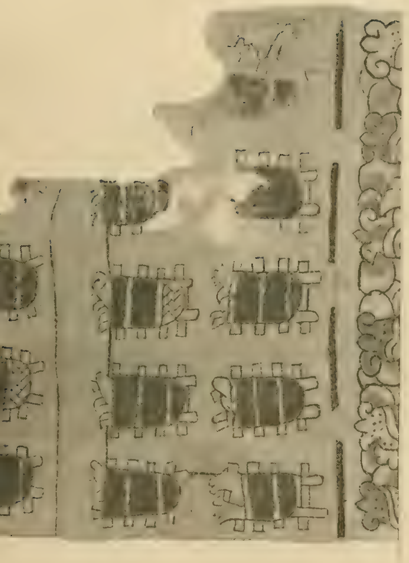
Philosophical Society, and followed the rows back and forth, always connecting directly with the last end. But there seems to be a hiatus at the left end of the third row. The writer must have begun anew here, that is, at the right of the fourth row. In the manuscript of the American Philosophical Society a woman's head is likewise always joined with two days. Thus the shifts of workers must there also have been changed every two days. There are no numerals with the heads.

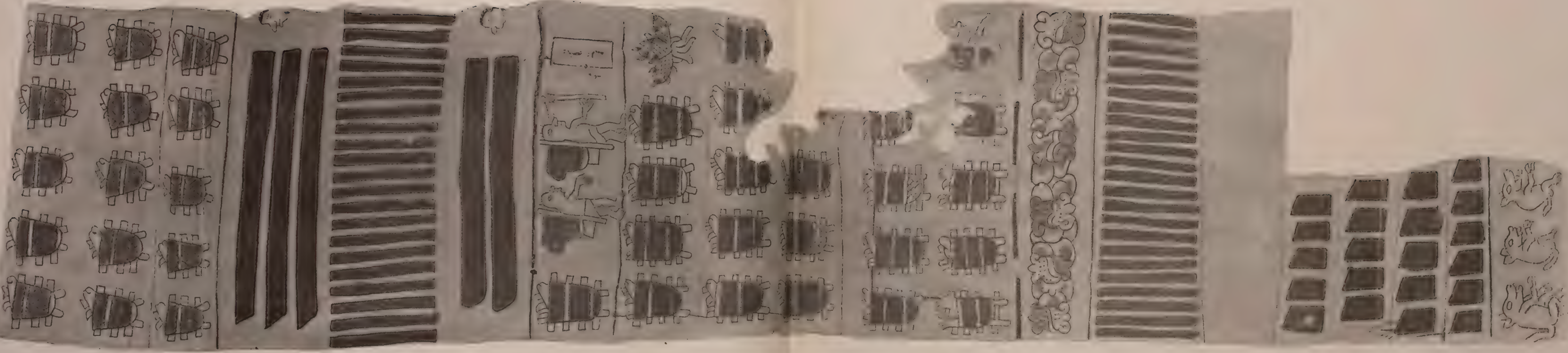
The chief service in which women have been employed among all the tribes has always been cooking. With the Mexicans this was an especially important office, as the chief article of diet, the tortilla (tlaxcalli), could not be prepared in large quantities to be kept, like our bread, but was freshly prepared by a somewhat elaborate process for every meal, and eaten fresh and hot. The American Philosophical Society's manuscript clearly and distinctly shows that this is the feminine office alluded to in our manuscript, because in one instance beside the woman's head a mealing stone (metlatl) is depicted with the pulverized grain on it, followed by the baking slab (*o*, figure 46), and in another the head is followed by a dry measure, *p*, which in Mexican painting denoted a fanega of corn (see *q*, taken from a page in the Aubin-Goupil collection, Goupil-Boban atlas, plate 27). On the page referred to there are five such measures with the little flag above them (20), and the Spanish text below explains that this means 100 fanegas of corn (que se entiende cien hanegas de mahiz). But since not only the mealing stone, but also the corn measure, was drawn beside the women's heads, I think it can be safely deduced that the account represented in the American Philosophical Society's manuscript noted not merely the service performed, but also the material delivered.

In our fragment XIII (plate XVIII) no such objects are drawn beside the women's heads. But the writing on the reverse side of the page proves that the reference is to similar services. The manuscripts in A. von Humboldt's collection are, as I have already stated, with the exception of the first, pasted upon large sheets of paper of the size of the atlas of which this is the descriptive text. In examining fragment XIII (plate XVIII), which is rather thin paper, it first occurred to me that there must be writing on the reverse side. I began cautiously to detach it, and by calling in expert assistance I succeeded in removing the sheet uninjured from its backing. On the reverse side I found the following document:

> Digo yo diego hermano del mayordomo deste pueblo de misquiaguala q. resebí del señor manuel de olvera coregidor deste dicho pueblo 101 peso y medio de las yndias quelles q. an hecho tortillas en su casa y me a pagado todas las demas q. han servido hasta oy. fecho







MEXICAN PAINTING—HUMBOLDT FRAGMENT XII

á veynte y nueve de mayo de mill y quiniento y sesenta y nueve años
tg mechior de contreras y galp ——— q. firmo per el otrgante
ante mi
s melchior de p. de palen ——
contreras

(" I, Diego, brother of the bailiff of this village Mizquiyauallan, acknowledge that I have received from Mr Manuel de Olvera, magistrate of this said village, 101½ pesos for the women who made tortillas at his house, and (that) he has paid me for all the other (women) who have performed services up to the present date. Done on May 29, 1569. Witness, Melchior de Contreras y Galp ——— in evidence of which I sign for him who executes this document.

" Melchior de Contreras.

" Before me, P. de Palen, ——.")

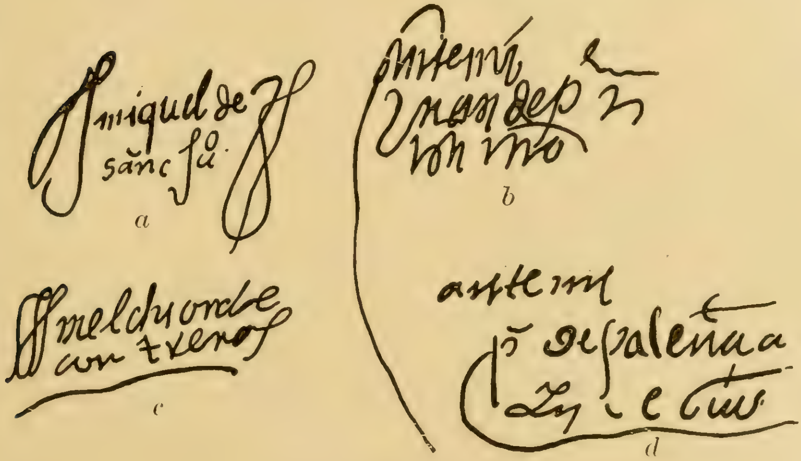


FIG. 47. Official signatures.

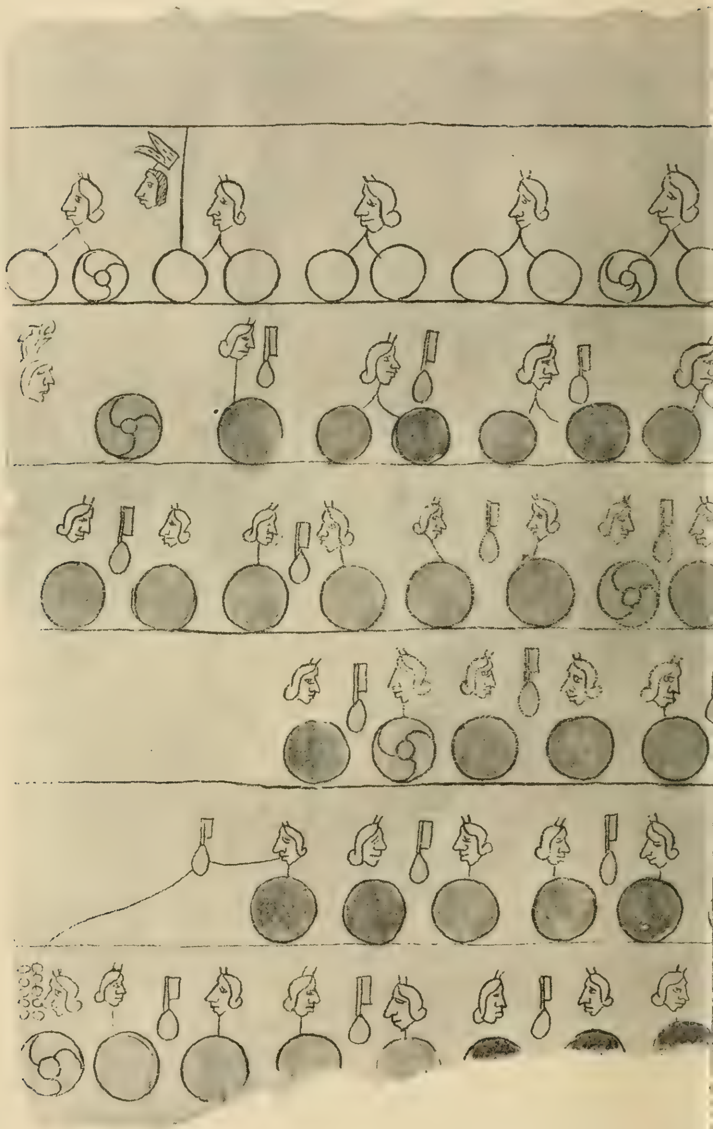
It is therefore clear that this fragment XIII was likewise an account, one indeed of services rendered by women, who were ordered to bake tortillas and to do other work. The account comes from the same village of Mizquiyauallan, to which the account on fragment VII (plate XII) of our collection belongs, and the reverse contains the receipt for wages paid for these services. The days which were cut out of the right side of the sheet seem to represent a deduction, a reduction of the account or a correction to which the person presenting it was obliged to submit. This document is two years older than that on fragment VII (plate XII).

As for the persons concerned, the receiver of the money is the brother of the major-domo of Mizquiyauallan, and is mentioned here, as is common among Indians, merely by his Christian name, Diego. The major-domo's name is not given, but it is probable that he is the person who signed the receipt on fragment VII (plate XII). There the major-domo himself signed the receipt (*a*, figure 47). Here his brother does not know how to write. A Spaniard, Melchior de Contreras y Galp——— (*c*) signs for him. The bill is paid by the same Manuel de Olvera mentioned on fragment VII (plate XII). Here, two years earlier, he was corregidor; that is, village magistrate.

I can not quite decipher the signature of the official before whom the business was transacted, *d*.

Finally, it is to be noticed that there are moreover three men's heads on our fragment, each with a hieroglyph behind or over it, which undoubtedly gives the name of the man. The heads with hieroglyphs in the top row both stand at the beginning of a section marked by a line of partition. The same seems to be the case in the second row from the top; for the progression here, as shown by the position of the women's heads, is from left to right, although the beginning of the division here (at the left end) is not especially denoted by a line. In exactly the same way a man's head with a hieroglyph is placed at the beginning of a section, designated by a line, in the document of the American Philosophical Society. These men's heads most probably represent the gobernadores de Indios or the village magistrates who furnished the women to bake tortillas. The man on the left end of the second row from the top has the head of a bird of prey behind him as a hieroglyph. His name may have been quauhti, "eagle", cuixtli, "hawk", or something of the kind. The man on the right end of the top row must have had a similar name. The man at the left end of the top row has a hieroglyph which seems to consist of two pointed leaf ends, with thorns on the upper surface. This may be the hieroglyph for Uitznauatl, for in the list of names of persons of Uexotzinco, where Uitznauatl is a quite common name, it is invariably expressed by the points of two agave leaves drawn side by side. It is very remarkable that in the document of the American Philosophical Society one of the two men's heads represented there, the one at the left end of the third row from the top, is marked by the same hieroglyph (see *m*, figure 46). The one at the right end of the fifth row was probably named Quiyauh, for his hieroglyph consists of three drops of rain hanging down (or falling) (see *n*, same figure).

Fragment XIII (plate XVIII) of our collection and the Tribute Roll 4 (Calendar 1) of the American Philosophical Society are doubtless distinct and independent documents, but so closely akin in idea, in drawing, and in various details, that we can safely attribute them to the same locality and period. Our fragment XIII (plate XVIII), having its explanation on the reverse side, is, therefore, a



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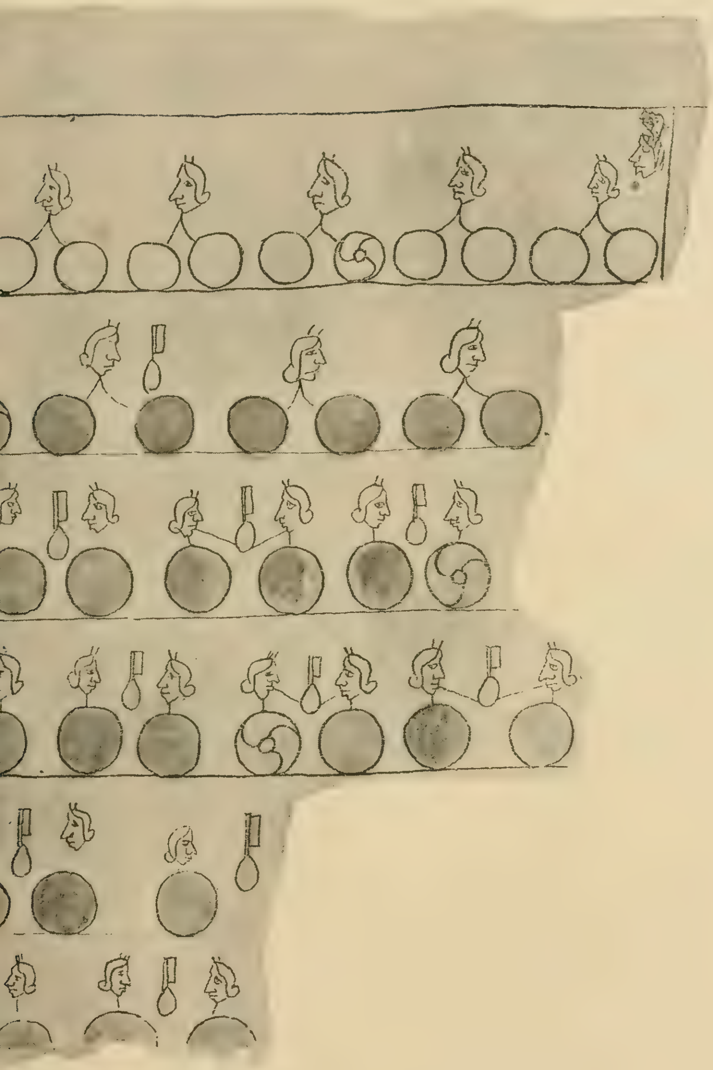
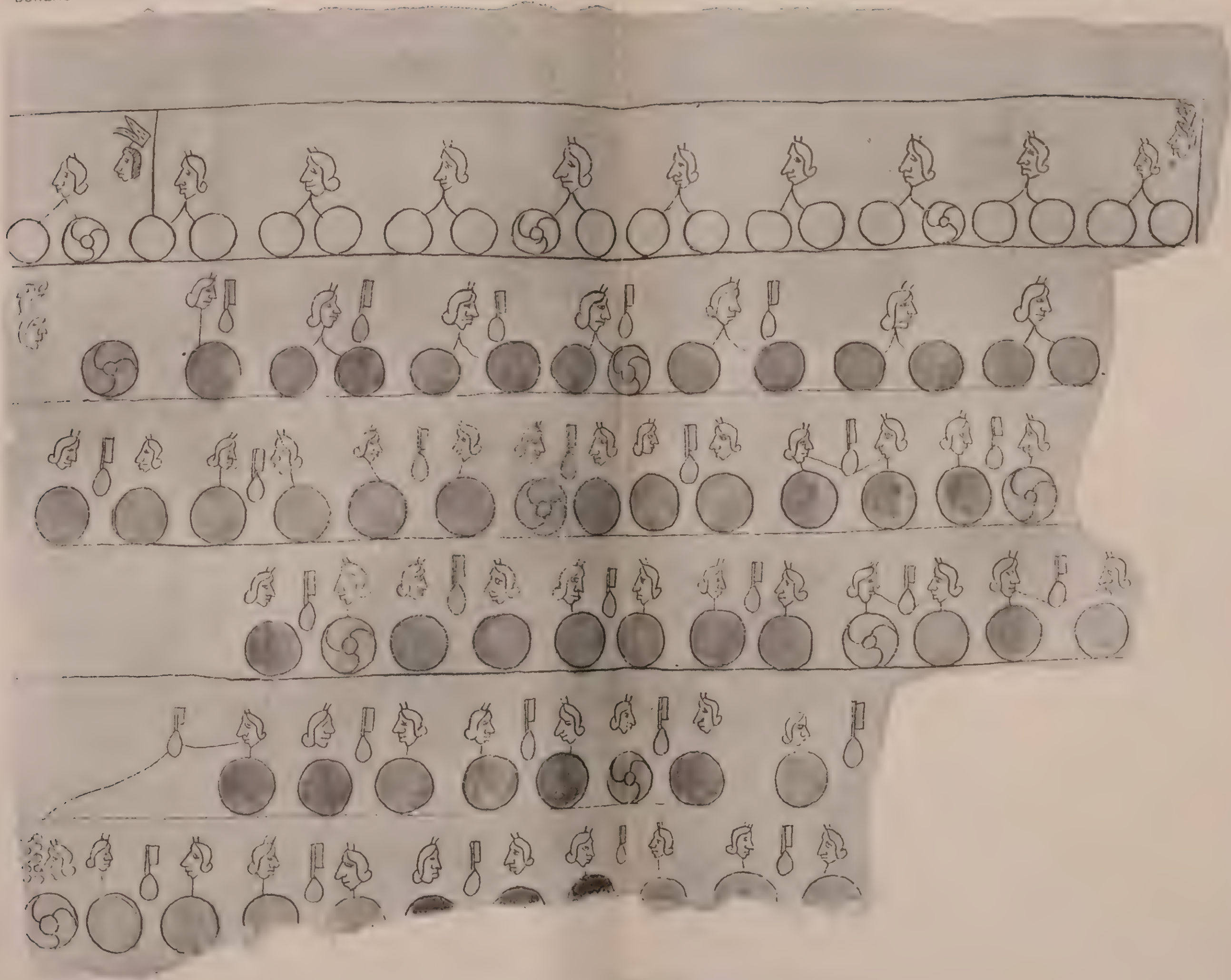


OLDT FRAGMENT XIII



MEXICAN PAINTING—HUMBOLDT FRAGMENT XIII

valuable document by which to judge the manuscript in the possession of the American Philosophical Society.

I have already mentioned that fragment VII (plate XII) of our collection, which, like fragment XIII (plate XVIII), now under discussion, came from the village of Mizquiyauallan, seems to have belonged to the Boturini collection. I quoted the passage in Boturini's Museo Indiano (Catálogo, number 1, section 21) which describes these manuscripts from Mizquiyauallan: Tres mapas en papel Indiano como faxas. Tratan de los tributos que pagaba el pueblo de Mizquiahuàllan, y en el se vên las cifras numéricas de cada cosa, que entregaban los vecinos ("Three maps on Indian paper like bands. They treat of the tribute paid by the village of Mizquiyauallan, and contain the numerical statement of each article furnished by the householders").

Now, if the one page of the Poinsett collection, at present belonging to the American Philosophical Society, is so closely related to fragment VII (plate XI) of our collection, and the other to our fragment XIII (plate XVIII) that we feel tempted to attribute them to the same place and date, then the question arises whether the two American manuscripts are not also mentioned in Boturini. This seems, indeed, to be the case; for, directly after the passage quoted above, two other and longer manuscripts from the same village are mentioned in section 21 of the Museo Indiano, under numbers 2 and 4:

2. Otro [mapa] de la misma materia y mas largo, de dicho pueblo [Mizquiahuàllan] ("Another [map] of the same material and larger from the same village [Mizquiyauallan]").

4. Otro del mismo papel y más largo del mismo pueblo ("Another on the same paper and larger from the same village").

FRAGMENT XIV

This (plate XIX) is a piece of tolerably thick, firm agave paper, 34 by 15 cm. Near the upper end two strips have been pasted one over the other. The frayed end of the strip underneath is plainly visible. Below the top row are the words estançia de tlatenpan.

The fragment may be divided into two essentially different parts, an upper and a lower one. In the upper part everything is painted crimson and in the lower yellow predominates. The base of the upper part is formed by a strip inclosed within two transverse lines, in which are three men's heads, each having a remarkable character behind it which looks like a key. Two of them are, moreover, provided with special hieroglyphs. I take the character which looks like a key actually to be one, and consider it as an expression of the word tlatlati, which means "he who hides something, or shuts up or guards something" (el que guarda alguna cosa, o el que esconde algo, Molina), for in the Xaltepetlapan list of names of persons (Manuscrit Mexicain number 3. Bibliothèque Nationale) I find mention of a man named Juan Tlatlatin, who is described by the hieroglyph *a*, figure 48; that is, by a hand holding up a key. The first person from the right seems to be hieroglyphically designated by two horns on his head. His name may therefore have been Quaquauh (see *b* and *c*, same figure), which in the list of names of persons (Manuscrit Mexicain number 3, Bibliothèque Nationale) denote persons of that name. The second person seems to be hieroglyphically designated by a stone (te-tl) and water (a-tl). The third person has no hieroglyph, and I can not interpret the circular design in front of him.

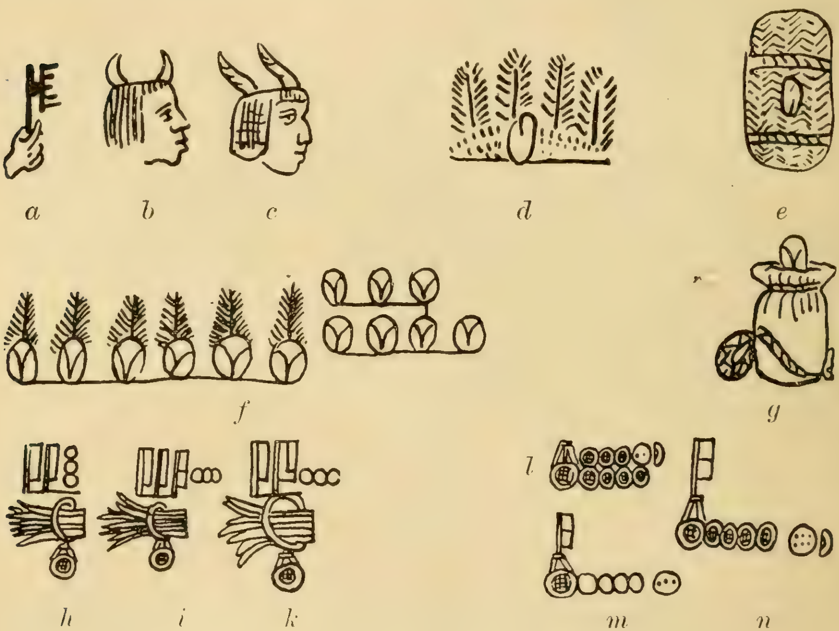
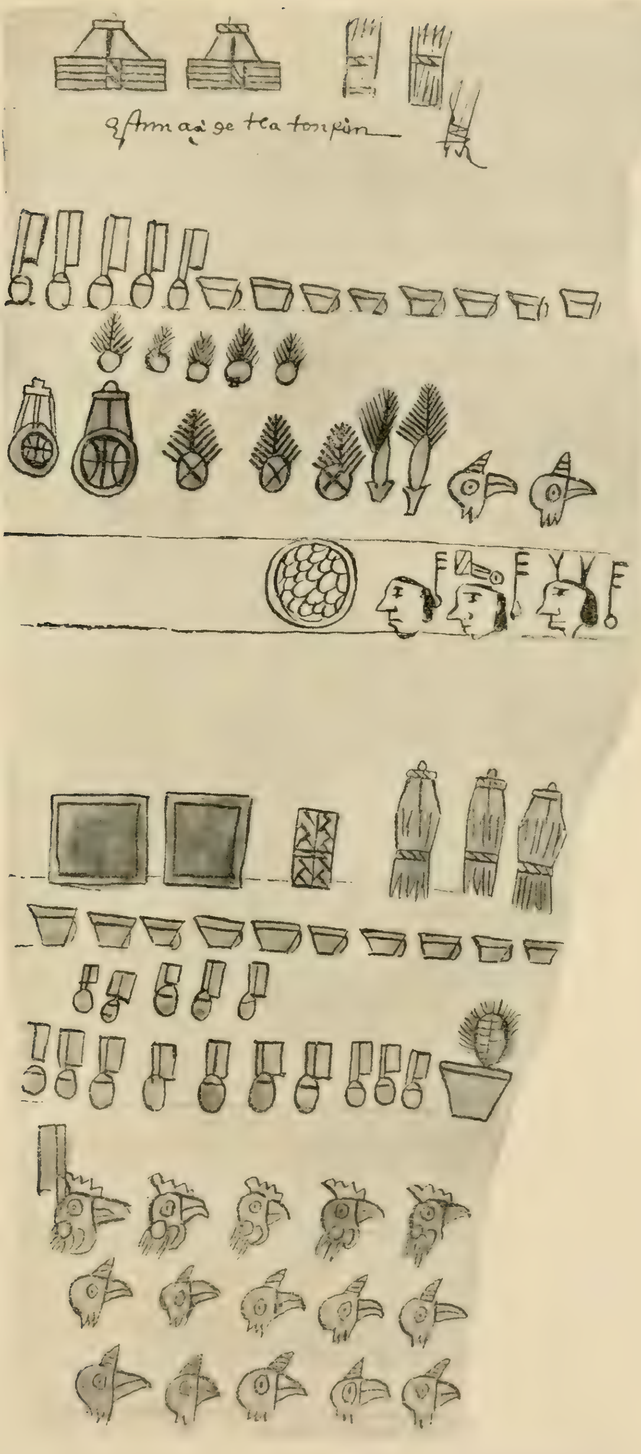


FIG. 48. Symbols for certain persons and for numbers.

Both divisions of the page treat of the same matter, the delivery of articles for which payment is asked or nonpayment is complained of; that is, it is an account or a bill of complaint.

If we take for granted that we are to proceed from below upward, as in the other fragments, then the first representation below would be ten turkey hens, followed by five cocks. Beside the cock at the left end of the row, however, there is a small flag, the sign for 20. This, therefore, must mean 24 cocks. In the next row above, first on the right, there is a vessel and above that a figure, which I can not explain, surrounded by featherlike rays, very much like those (see the upper half of this fragment) which are drawn to denote the num-


qAmmaçi ge tlatonpin

MEXICAN PAINTING—HUMBOLDT FRAGMENT XIV

ber 400 (tzontli). Then follow small oblong objects, each with a small flag (20), and in the row above there are ten vessels, each of which probably stands for a fanega of corn (see *p* and *q*, figure 46).

We have in the right lower section of the red upper portion of our fragment first, immediately over the men's heads, two turkeys' heads, similar to the lower division. Then follow two figures which are probably meant for chili, " red-pepper pods ", each provided with the bush, which denotes the number centzontli, or 400. Turkey and red-pepper sauce belong together. Molle con guajolote is still the holiday dish throughout the country. Then follow three round objects, each intersected by a cross and with the number 400 attached; then, two peculiar figures, which we have not hitherto encountered, and of which I shall speak directly. Over them are five small circles, each with the number 400, and in the row above eight vessels (fanegas of corn) and round objects like those in the lower row, each with a little flag indicating 20.

The question now arises, what are the little oval objects, fifteen of which in the lower compartment are marked with a little flag, a total of 3,000, and five in the upper portion with the little flag, a total of 1,000? Since these articles are counted and the amounts reach so high a figure, I think they must be meant for cacao beans (see *d* to *g*, figure 48). This mode of counting also occurs in other manuscripts (see *d*, taken from the tribute list in the Mendoza codex, page 19, described in the text as " 1,600 almendras de cacao "; and *f*, taken from the Pintura del Gobernador, Alcaldes y Regidores de México, where the little flag or 20 is omitted from the single beans on the right). The text says, chiquacen tzontli ypan chicompohualli, which means six times four hundred, and seven times twenty (cacao beans). But this very omission of the little flag in this painting proves that the unit in counting chocolate nuts was the number 20, which is always applied on our page to these doubtful objects. It is well known that chocolate nuts were used in ancient Mexico for small change and were therefore counted.

The decussated and plain circles in the upper division, all provided with the bush (for 400), are probably only simple numerals, and refer either to what went before (the red-pepper pods) or to what follows above (the chocolate nuts).

As for the two peculiar figures at the left end of the lower row in the upper division, they are an expression for a load, derived from the scale pan of a balance. This is obvious from a manuscript in the Aubin-Goupil collection, formerly owned by Don Antonio Leon y Gama, that is interesting on account of the peculiarities of its system of notation, which will be noticed here and were first noted by

Gama in his appendix relating to Mexican arithmetic.[a] A page of this manuscript is reproduced on plate 30 of the Goupil-Boban atlas. Here we see, for instance, forty-three, fifty-three, and thirty-eight loads of cornstalks (zacate) expressed by *h*, *i*, and *k*. I have chosen these examples because they illustrate the peculiarities of notation, which occur in this manuscript. On this page the number 10 is expressed by halving the little flag, which denotes 20, and coloring only one of the halves, the number 15, by cutting away a fourth part of the little flag and coloring the other three-fourths. It is significant for our fragment that in all the three figures *h* to *k* we have not only the bundle of zacate, but also a scale pan hanging from it, which is the symbol of a load. That the scale pan does indeed typify the weight, a load, on this page is made still further evident by the fact that on the same page the same symbol of the scale pan is used to denote the coin 1 peso, as we saw it in *c*, figure 44 (see *l* to *n*, figure 48, where the reals and medios are attached to the pesos in the same way as we saw them in *c* to *f*, figure 44, which I have already discussed more particularly). The two figures at the left end of the lower row in the upper (red) division, therefore, must signify a load. This again may refer to what went before (the red-pepper pods) or to what follows (the cacao beans); for these were also reckoned by loads (see *e* to *g*, figure 48, the former from the Mendoza codex, the latter from the Pintura del Gobernador, Alcaldes y Regidores de México).

This being settled, the top rows of the two divisions also become clear. In the top row of the lower division we have on the right first, three loads of zacate. Here no scale pan is drawn hanging from the bundle, as in *h* to *k*, but the whole bundle, instead of the scale pan, hangs by the three cords. Then follows a mat, and, lastly, two square objects which may represent boards or perhaps some woven fabric.

In the top row of the upper division we have first, on the right, two bundles of zacate; then, two loads of wood. Here the load is drawn in the same way as in the lower division; that is, the bundle of wood in place of the scale pan hangs from the three cords.

Plate 30 of the Goupil-Boban atlas, which gave us the key to the meaning of the figures selected to denote loads on fragment XIV (plate XIX) of our collection, belongs to a manuscript which is furnished with text and is a bill of complaint issued against Captain Jorge Cerón y Carabajal, alcalde mayor of the town of Chalco, brought before the Real Audiencia of Mexico in the year 1564. It is not improbable that our fragment came from the same locality, and perhaps it belongs to the same period.

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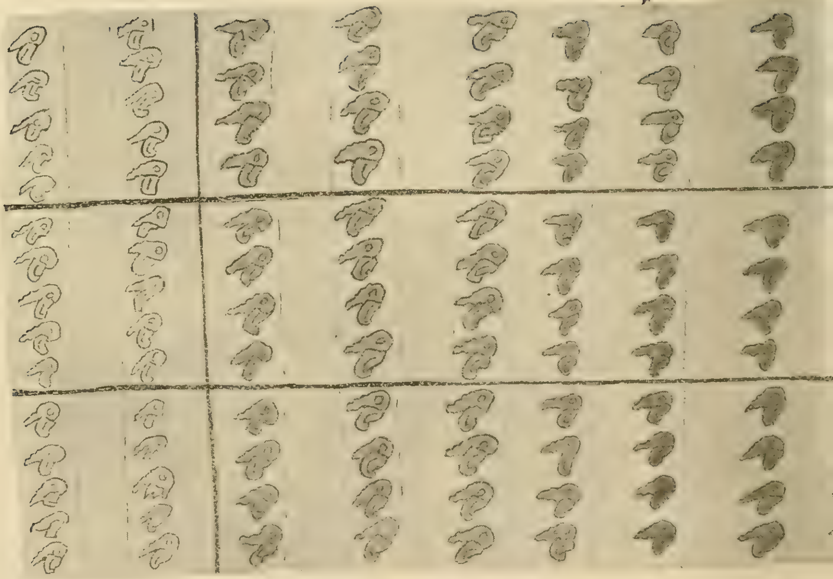
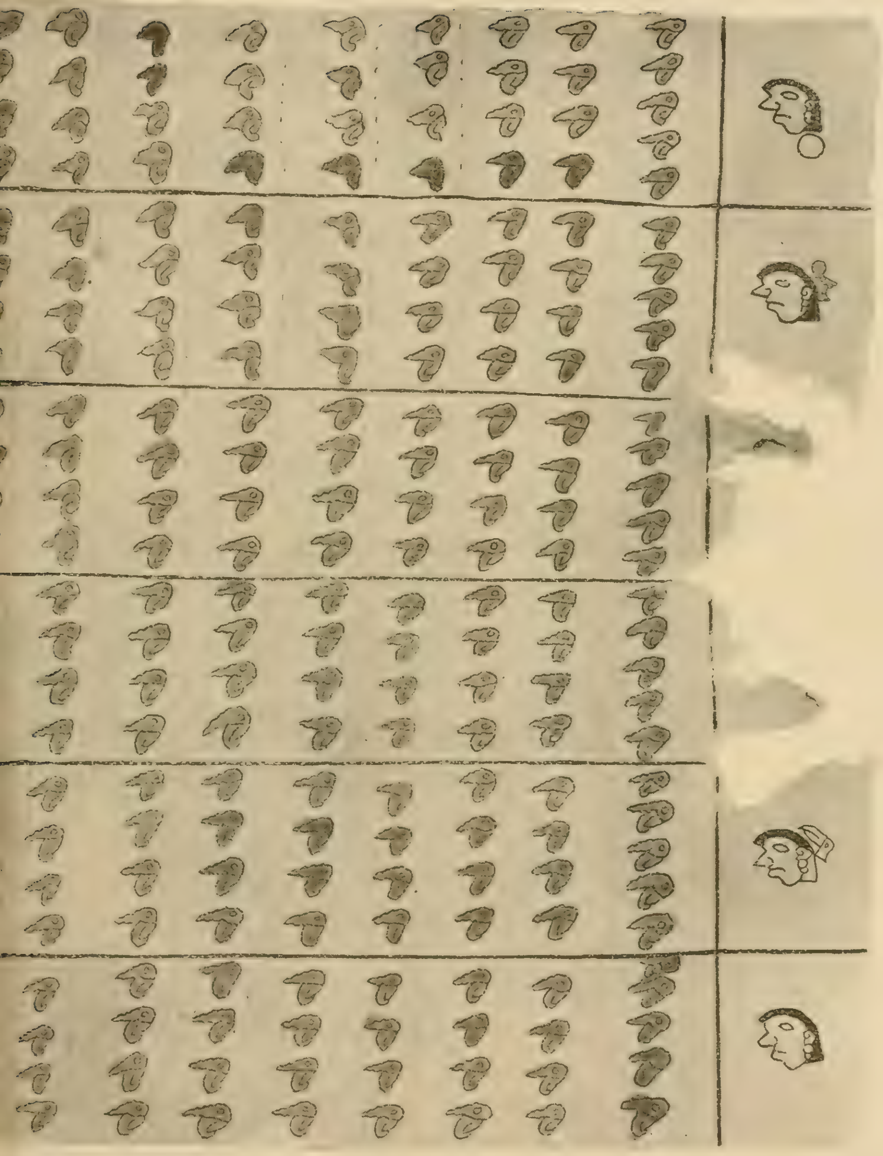
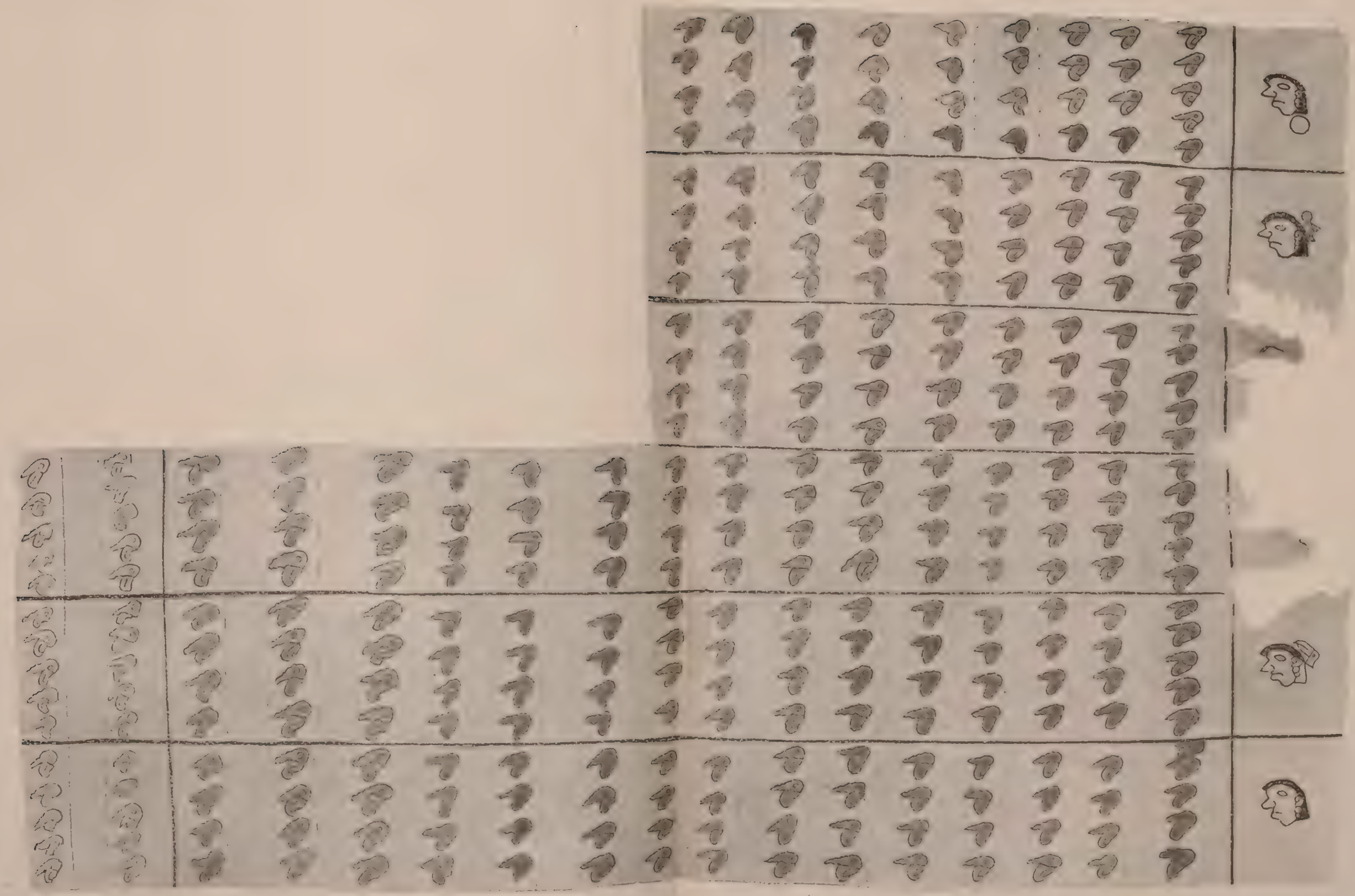
[a] Gama, Dos Piedras, edid. Bustamente. México, 1832, p. 137.



MEXICAN PAINTING



MBOLDT FRAGMENT XV



MEXICAN PAINTING—HUMBOLDT FRAGMENT XV

FRAGMENT XV

This (plate XX) is a strip of agave paper 34 cm. long and 52 cm. wide, which resembles the fragments X to XII (plates XV, XVI, and XVII). The drawing of the figures also exhibits an unmistakable resemblance to those fragments.

This fragment also belongs among those of our collection which can with tolerable certainty be identified with some of those described by Boturini. It is mentioned in the Catálogo del Museo Indiano in section 21, under number 10: Otro [mapa] del mismo [papel Indiano], y pinta gran Numero de pavos, que se pagavan de Tributo. No se sabe de que pueblo ("another [map] on the same paper [Indian paper], which depicts a great number of turkeys, which were paid as tribute, it is not known from what town").

Besides the personages on the right, there are only turkey cocks (designated by the heads) represented in the six divisions, which are formed on the fragment by transverse lines. The first fifteen vertical rows are painted red, the last two blue. In every transverse division we have in the first vertical row (on the right) 5 turkey heads, and in all the following vertical rows only 4. The whole number of red turkey heads occurring in one division is, therefore, 61. The rows of blue turkeys are probably incomplete.

Of the persons on the right side of the fragment the lowest one has no hieroglyph. The next one is designated by a bird's head with a long curved beak. The next two are destroyed. The one before the last has for a hieroglyph the picture of a fish close beside his head; his name, therefore, was probably Michin. The topmost one has a circle below his head, which may have reference to his name.

FRAGMENT XVI

We have next a strip of thick, firm paper 35 cm. long, 45 cm. wide, which looks like European paper made of rags. Microscopic investigation, however, reveals a fiber which in appearance, thickness of cell wall, size of lumen, etc., is apparently precisely like the fibers of the coarse agave paper used for fragments III (plate VIII) and IV (plate IX). But, together with these, single fibers occur which are very delicate and spirally coiled, and which seem to stretch and unroll slightly in the water of the object glass.

This fragment, as the creases prove, was folded in four parts, and is much damaged, especially on the right side. The drawings are done in black ink, without other coloring. The pictures begin above at the left, and continue in this row from left to right, but in the second row from right to left, and so on, the direction alternating.

The representations are of a religious nature. In order to understand them it is necessary to consult the Roman Catechism, especially those versions of it which were used in earlier times, as well as down to the present day, by the priests who were sent to the Indian villages to instruct the natives and take charge of their spiritual welfare. I found an exact agreement between the representations on our fragment and the text of a Catecismo en Idioma Mixteco, printed in 1839 at Puebla. The numerals given on the fragment at once made it plain to me that the fourteen articles of faith of the Roman catechism, and, lower down, the ten commandments are here represented. I will take the catechism printed in 1839 as my starting point, and will give in each successive section, first, the paragraph from the catechism and then the description of the picture which explains it.

The first row begins at the left: Section 1. Los articulos de la Fé son catorce ("There are fourteen articles of faith"). The picture shows us first a page covered with writing and a hand which points to it. This means article. Then comes a cross on a base formed by a series of steps; this means faith. Then comes the numeral 14, arranged in the usual way in groups of five. Section 2. Los siete pertenecen á la divinidad ("Seven appertain to the deity"). The picture gives us first the numeral 7 and then a bearded (Spanish) face, and over it a drawing, apparently meant to represent a halo, consisting of a metal disk, in the center of which and at regular distances in the periphery there are perforations. This is the hieroglyph regularly used throughout to denote God. Section 3. Y los otros siete [pertenecen] á la santa humanidad de nuestro Señor Jesucristo ("And the other seven [appertain] to the holy humanity of our Lord Jesus Christ"). The picture gives first the numeral 7. Then, on a base, cross, spear, and the sponge soaked in vinegar and fastened to a reed, which means the crucified, the God-man. Section 4. Los [siete articulos] que pertenecen á la divinidad son estos ("Those [seven articles] which appertain to the deity are these"). The picture gives first the numeral 7, then the hieroglyph for "article" (see section 1), then the picture of God (see section 2), only there is a flowing garment indicated here below the head. Section 5. El primero [articulo] creer en un solo Dios Todospoderoso ("The first [article], to believe in one Omnipotent God"). The picture gives the numeral 1, the hieroglyph "article", and the picture of God. With the hieroglyph "article" is combined a figure which is difficult to interpret. Possibly it is meant to represent the One over all things, the Almighty. Section 6. El segundo [articulo], creer que es Dios Padre ("The second [article], to believe that He is God, the Father"). The picture is partly destroyed. The numeral 2 must have stood at the top. Then follows the hieroglyph "article", and the picture of God as He was represented in section 4, but here He has two arms. The left hand holds the imperial globe. In the right He probably held a scepter. Section 7. El tercero [articulo], creer que es Dios Hijo ("The third [article], to believe that He is God, the Son"). Part of the numeral 3 is still visible with the hieroglyph "article", below, and, close by, a figure with a garment like the one in section 4 and an outstretched arm. The head and essential parts, however, are destroyed.

The second row begins at the right: Section 1. El cuarto [articulo], creer que es Dios Espíritu Santo ("The fourth [article], to believe that He is God, the Holy Ghost"). On the right a part of the numeral 4 is still discernible. Then follows the hieroglyph "article", and then the dove descending from heaven, which is the Holy Ghost. Section 2. El quinto [articulo], creer que es Criador ("The fifth [article], to believe that He is the Creator"). At the right of the division is the numeral 5, and in front of it the hieroglyph "article". On the left is God with the imperial globe in His hand. Above, are depicted the starry heavens; below, a house built of bones, that is, the lower regions. Section 3. El sesto [articulo], creer que es Salvador ("The sixth [article], to believe that He is the Saviour"). On the right is the numeral 6; then God with the cross in one hand and in the other the spear (which made the wound in His side). Section 4. El séptimo [articulo], creer que es Glorificador ("The seventh [article], to believe that He is the Glorifier"). On the right is, first, the hieroglyph "article"; then the numeral. On the left is the head of a priest—not of God, for the bearded face is represented with plain hair, without the massive halo. In the middle of the division are two thick, black figures, like iron bolts, symbols employed below to express the idea of commandment. This is clearly intended to represent the priest filled with the Holy Ghost, who regulates the life of the parish. Section 5. Los [articulos] que pertenecen á la Santa Humanidad de nuestro Señor Jesucristo son los [siete] siguientes ("Those [articles] which appertain to the holy humanity of our Lord Jesus Christ, are the [seven] following"). The picture shows us first at the right a figure which reminds us of the tufts of eagle's down in the old manuscripts. I can not wholly explain it. It apparently serves here as a mark of separation. Then follows the numeral 7; then the cross and instruments of the passion, just as in section 3 of the first row. Section 6. El primero [articulo], creer que nuestro Señor Jesucristo en cuanto hombre fué concebido por obra del Espíritu Santo ("The first [article], to believe that our Lord Jesus Christ in so far as He was man, was conceived of the Holy Ghost"). The picture shows us to the right 1 (a circle); below it the hieroglyph "article"; then the Holy Ghost as a dove and, in a manner proceeding from it, the face of God, as heretofore. From this section on there is some confusion in the numeration. A new section ought to follow now with the numeral 2, and with what is pictorially represented in the rest of section 6, for there now follows in the catechism: El segundo [articulo], creer que nació de Santa Maria Virgen siendo ella virgen antes del parto, y despues del parto ("The second [article], to believe that He was born of the Holy Virgin Mary, she being a virgin before and after His birth"). The picture shows us the Virgin Mary with a halo, and issuing from her body is God, as previously represented, but with the spear, the instrument of the passion, in his hand. But the numeral 2, which should be here, is in section 1 of the third row following.

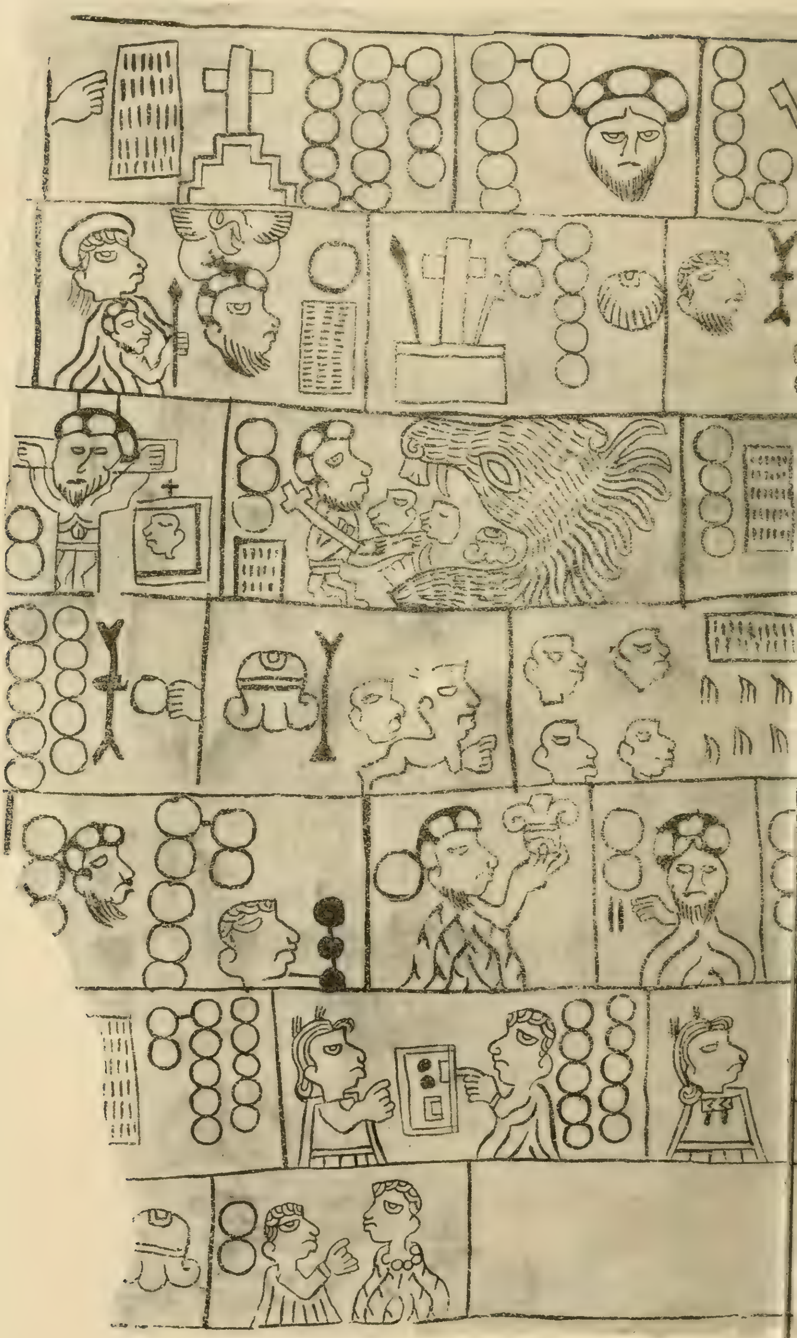
The third row begins at the left: Section 1. El tercero [articulo], creer que recebió muerte y pasion por salvar á nosotros pecadores ("The third [article], to believe that He suffered and died to save us sinners"). The picture shows us first, on the left, the numeral 2, which really belongs in the second half of the preceding section; then God crucified, and then in the grave, marked by a cross, the corpse, recognizable by the closed eyes. Section 2. El cuarto [articulo], creer que descendió á los infiernos y sacó las animas de los Santos Padres, que estaban esperando su santo advenimiento ("The fourth [article], to believe that He descended into hell and brought out the souls of the holy fathers, who were abiding there in hope of His blessed coming"). First, on the left, is the numeral 3, which really belongs to the preceding section, and under it the hieroglyph "article". Then follows God with the cross in His right hand and before Him a short path, the two footprints of which lead into the wide-open jaws of a fiery monster, which represent the interior of the earth, or hell, quite after the manner of ancient Mexican symbolism. Within are to be seen the souls, represented by a heart, otherwise the dead, represented by heads with closed eyes. Section 3. El quinto [articulo], creer que resuscitó al tercer dia de entre los muertos ("The fifth [article], to believe that He rose again from the dead on the third day"). On the left is, first, the numeral 4, which really belongs in the previous section. Then comes the hieroglyph "article". On the right are the dead with fleshless ribs and closed eyes, and before them is God with the spear, the instrument of the passion, in His hand. In the center, a figure bent at right angles and twice doubled, which is probably meant to express the act of arising. Section 4. El sesto [articulo], creer que subió á los cielos, y está sentado á la diestra de Dios Padre Todopoderoso ("The sixth [article], to believe that He ascended into heaven, where He sitteth at the right hand of God, the Omnipotent Father"). The picture presents first, on the left, the numeral 5, which really belongs in the previous section. Then follows the face of God, and joined to this is a ladder leading up to the starry heavens. A hand from heaven points to a circle filled with network, which is apparently meant, like the similar figure in the fifth section (from the left) in the first row, to express the

Omnipotent God. Section 5. El séptimo [articulo], creer que vendrá á juzgar á los vivos y á los muertos, etc. ("The seventh [article], to believe that He shall come to judge the quick and the dead"). On the left is, first, the numeral 6, which really belongs in the previous section. Then follows God with the sword, the symbol of justice, in His hand. Then followed, evidently, the dead in one square, and the living in another; but the edge is destroyed and very little more of the picture is now to be seen. The last words of explanation follow in the next row.

The fourth row begins at the right. Section 1. Conviene á saber, á los buenos, para darles gloria, porque guardaron sus Santos Mandamientos ("The good should know, to give them glory, because they kept His holy commandments"). First, on the right, is the numeral 7 and the hieroglyph "article", which really belong in the previous section. Then comes a house containing a man, behind whom is a sign like an ear of maize, which is used as below in the third commandment (row 5, section 6), as an expression for "receiving honor". The whole probably signifies a good man. Then follows a picture which I can not exactly explain, and this is followed by the bearded face of a priest who seems to proffer the same sign for "honoring". Sections 2 to 4. Y á los malos pena eterna, porque no los guardaron. Amén ("And to the wicked eternal punishment, because they kept them not. Amen"). Here I am not quite sure whether the first of these sections does not belong to the foregoing. On the right we see first a hand with a circle, which in section 5 seemed to indicate the beginning of a new chapter. Indeed, the whole fragment begins above, with a hand. Then follows the hieroglyph "article". Then comes a circle with a cross and a semicircular figure over it, which I can not explain. In the next section flames seem to be indicated, and farther on are the heads of the damned. In the next section we have a man prostrate on the ground, probably one of the damned, or the devil looking on. Then follow the black iron bolt and the inverted heart, which signifies souls in hell, as we have already seen in the representation of the jaws of the earth in the second section of the third row. With section 5 begins the new chapter, the ten commandments. The catechism begins with the words: Los mandamientos de la ley de Dios son diez ("The commandments of God's law are ten"). The picture shows us, first, on the right, a hand and a circle, which denotes the beginning of a chapter. Then follows the iron bolt, which possibly expresses the idea "commandment". Then the numeral 10.

The fifth row begins at the left: Section 1. Los tres primeros pertenecen al honor de Dios ("The first three appertain to the honor of God"). The picture shows the numeral 3 and the head of God (with the massive, perforated halo). Section 2 (not separated from the preceding one by a line). Y los otros siete al provecho del prógimo ("And the other seven to the advantage of the neighbor"). The picture shows the numeral 7 and a human head, combined with three black balls or circles. I can not explain the latter. Can they mean coins to express provecho? Section 3. El primero, amarás á Dios sobre todas las cosas ("The first, thou shalt love God above all things"). The picture shows the numeral 1; then follows God, holding a heart in His hand. Section 4. El segundo, no jurarás el nombre de Dios en vano ("The second, thou shalt not take the name of God in vain"). The picture shows the numeral 2, with the picture of God, and on the right of the neck a hand pointing to two black marks. The symbolism is not clear to me. Section 5. El tercero, santificarás las fiestas ("The third, thou shalt keep holy the feasts"). The picture shows the numeral 3; then what seems to be an arrow well wrapped, which is probably meant to express "to keep, or hallow"; then a house with the priest inside the church. Section 6. El cuarto, honrarás á tu padre y madre ("The fourth, thou shalt honor thy father and mother"). The picture shows the numeral 4, followed by a man, the father, holding in his hand the symbol resembling an ear of maize, which we met with above as a symbol for "honor shown". In the middle stands the child, and on the right the mother, recognizable by the manner of wearing the hair with the knot low on the neck, the two hornlike braids standing up over the forehead, and the feminine garment (uipilli) something like a shirt, with the piece of insertion ornamented with tassels below the opening for the neck. Section 7. El quinto, no matarás ("The fifth, thou shalt not murder"). The picture shows on the left the numeral 5, then a man with a sword in his hand, and facing him a bearded man who stretches out his hand as if to ward off injury.

The sixth row begins at the right: Section 1. El sesto, no fornicarás ("The sixth, thou shalt not commit adultery"). To the right is the numeral 6, of which only a few faint traces remain; then follows the picture of a woman like the mother in the fourth commandment (row 5, section 6). Section 2. El septimó, no hurtarás ("The seventh, thou shalt not steal"). The picture represents the numeral 7 and a man fingering the lock of a door or a chest. Section 3. El octavo, no leventarás falso testimonio, ni mentiras ("The eighth, thou shalt not bear false witness or lie"). Here we have the numeral 8 and a man delivering a letter covered with black marks. Section 4. El noveno, no desearás la muger de tu progimo ("The ninth, thou shalt not covet thy neighbor's wife"). The picture shows the numeral 9 and a man stretching out his hand toward a woman opposite to him. Section 5. El décimo, no codiciarás bienes agenos ("The tenth, thou shalt not covet thy neighbor's goods"). This picture shows the



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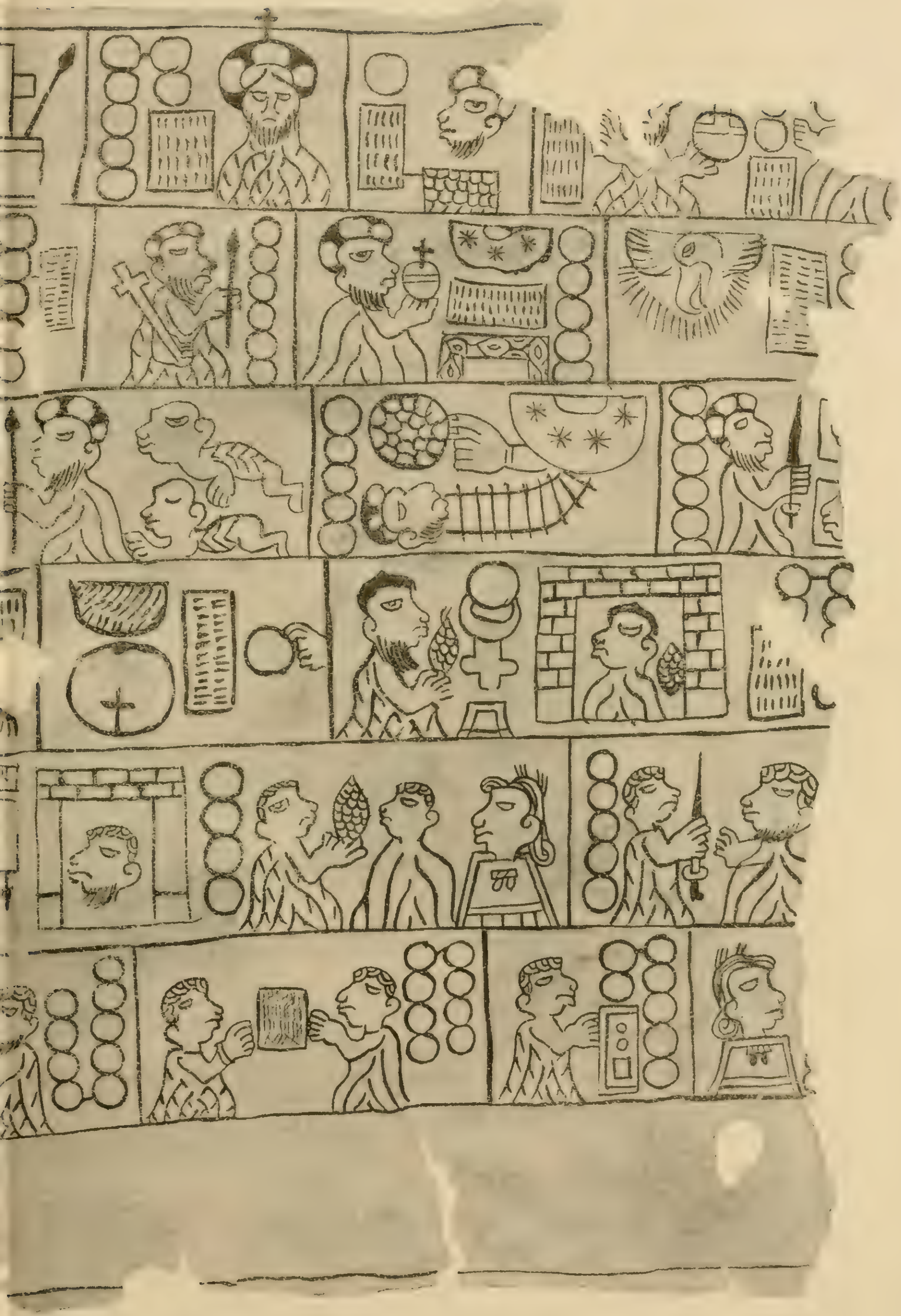
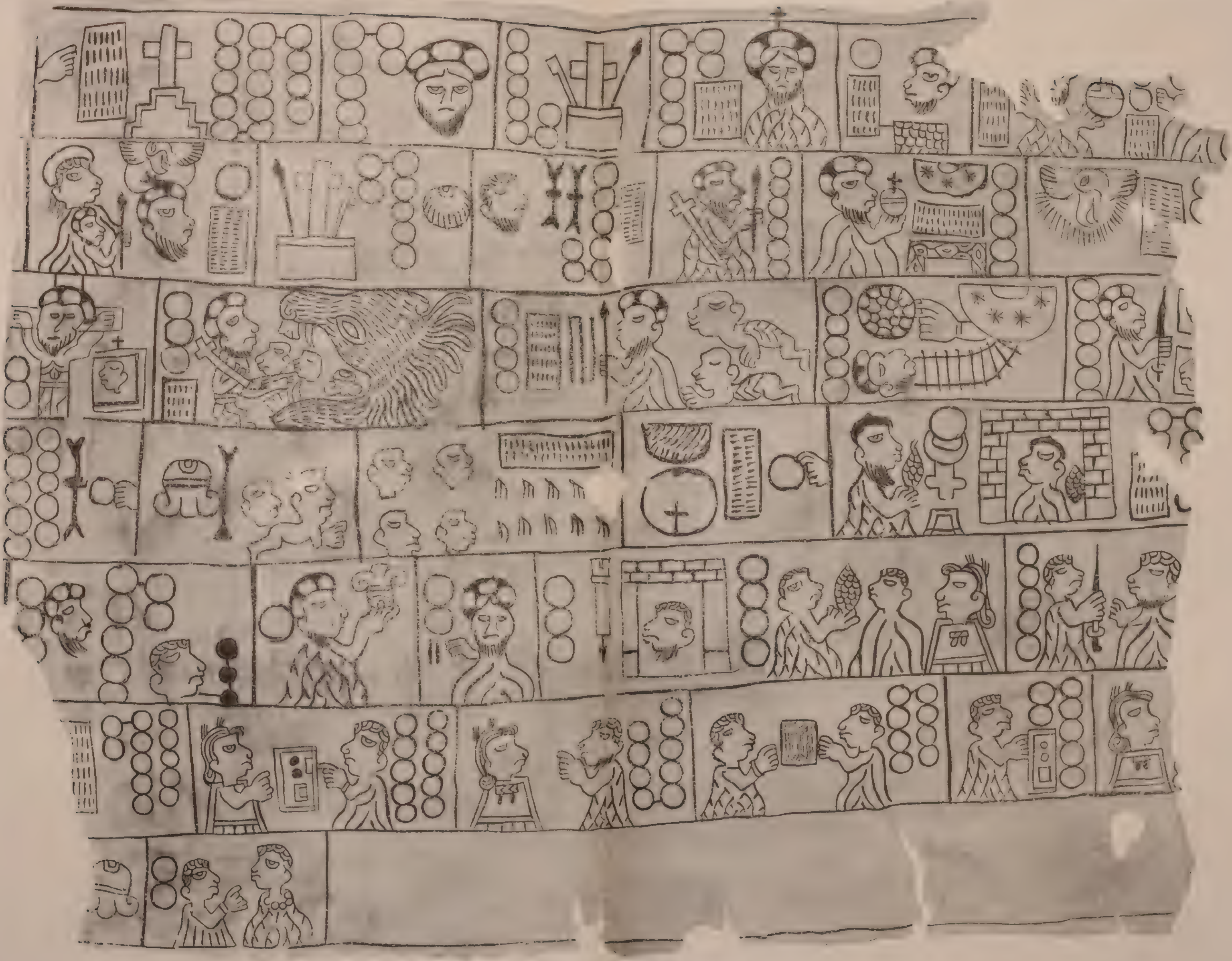


UMBOLDT FRAGMENT XVI



MEXICAN PAINTING—HUMBOLDT FRAGMENT XVI

numeral 10 and a man stretching out his hand to the objects opposite to him. the lock of a door or chest and a woman. Section 6. Estos diez mandamientos se encierran en dos (" These ten commandments may be comprised in two "). The picture shows the numeral 10, and joined to it by a line the numeral 2; then follows the hieroglyph " article ".

The seventh and last row begins at the left: Section 1. En servir y amar á Dios sobre todas las cosas (" To serve and love God above all other things "). On the left may have been the picture of God. The picture of the heart is still visible here, as in the first commandment (row 5, section 3), expressing the idea of love. Section 2. Y á tu progimo como á ti mismo ("And thy neighbor as thyself "). The picture shows the numeral 2 and then two men, to express neighborly love.

We have been able to prove, or to make it seem probable, that most of the manuscripts in our collection once belonged to the great collection of the Cavaliere Boturini, which he was forced to leave behind him in Mexico when he was released from prison. Does this also hold good in regard to this manuscript of religious import, the last in our collection? Boturini enumerates in section 25 of the catalogue of his Museo Indiano the follo ng manuscripts of religious character:

1. A manuscript of 11 pages on European paper, whose authorship he ascribes to Padre Sahagun. This now belongs to the Aubin-Goupil collection. Two pages of it are published on plate 78 of the Goupil-Boban atlas.

2. A manuscript on agave paper, which he describes as follows: Otro pedazo de mapa con figuras y cifras en papel Indiano. Demuestra parte de dichos misterios; i. e.. de nuestra Santa Fé ("Another fragment of a map, with illustrations and numbers, on Indian paper, shows part of the said mysteries, that is, of our holy faith ").

3. A manuscript of 4 pages on European paper with interlinear explanations in Otomí, además de las figuras y cifras, unos pocos venglones en lengua Otomí (" besides figures and pictures, a few lines in the Otomí language "). This manuscript now exists in the Aubin-Goupil collection. Two pages are reproduced in plate 76 of the Goupil-Boban atlas.

4. Un librito en papel Europeo de 48 fojas chiquitas. Explica con toscas figuras, y cifras la dicha Doctrina (" a small book on European paper, of 48 tiny pages. Explains the said doctrine in rude pictures and figures "). This manuscript is also in the Aubin-Goupil collection. Two pages are reproduced in plate 77 of the Goupil-Boban atlas. The figures are there provided with explanations in Nahuatl.

Of the four manuscripts of a religious character owned by Boturini, the fourth, which Boturini mentions under number 2, has not thus far been found, but the description of this manuscript agrees perfectly with our manuscript, fragment XVI (plate XXI). For our manuscript is also written on agave paper, and in the representations the numerals alongside the pictures are very conspicuous. I therefore deem it not only possible, but highly probable, that our fragment XVI is the manuscript described by Boturini, number 2, section 25.

Our manuscript, inferior as it is to the paintings of the old pagan time, is nevertheless superior to the manuscripts of a religious character in the Aubin-Goupil collection by reason of a certain vigorous style. I am under the impression that the Aubin-Goupil picture catechisms were executed by European priests, but that the old aboriginal Indian training is evident in the drawing of our fragment XVI (plate XXI).

CONCLUSION

The 16 (properly 14) picture manuscripts in the Alexander von Humboldt collection, however limited the contents of the separate fragments (excepting the first one) present a good synopsis of the various styles and of the various purposes for which it became necessary to employ hieroglyphs in old pagan and early Christian times. They are not only of archeologic interest and of interest in the history of civilization, but some of them, as we have seen, are also of positive historic value; for, as I have shown, it seems possible to establish a firm chronologic basis only by acting on the indications offered by fragment I of our collection. Some fragments, namely, I, III, and IV (plate II to VI, VIII, and IX), belong to the old pagan period. Others certainly originated in early Christian times: VI (plate XI) is to be attributed to a period prior to A. D. 1545; II (plate VII), before A. D. 1565; XIII (plate XVIII) bears the date 1569; VII (plate XII), the date 1571, and the other fragments also can not be much later than these. As for the place where they originated, I can unfortunately say nothing positive in regard to I (plates II to VI); III (plate VIII) and IV (plate IX) came from Huamantla, in the state of Tlaxcallan; II (plate VII) came from the immediate neighborhood of the Mexican capital; while VI (plate XI) and VIII (plate XIV) are from the kingdom of Tezcuco; VII, XII, XIII, and XVIII, from Mizquiyauallan, in the land of the Otomí; and XIV (plate XIX) possibly from the kingdom of the Chalcas. Several of the manuscripts seem to express plainly the differences which existed among the Mexican-speaking races in spite of all their similarity in civilization, mode of living, and ways of thinking, and they are otherwise very instructive, as we have seen.

Our great countryman, whose field of labor lay in quite another domain, rescued these fragments from among a number of documents, which at the time were the prey of chance in Mexico. Since then they have lain among other manuscript treasures in the Royal Library, little noticed, or, more correctly speaking, seldom used. It is partly owing to facts that have only very recently become known that I have been able to make these fragments divulge some portion of their contents.

Last year we celebrated the four hundredth anniversary of the day on which Columbus, the discoverer of America, first set foot in the New World, and within a few years we can celebrate the one hundredth anniversary of the day on which the scientific discoverer of the New World, Alexander von Humboldt, began his travels on that continent. May this volume, which is the first attempt at treating of the only one of his collections hitherto untreated, be not wholly unworthy of the great name which it bears on the title page.

THE BAT GOD OF THE MAYA RACE

BY

EDUARD SELER

THE BAT GOD OF THE MAYA RACE[a]

By Eduard Seler

The beautiful drawing sent by Mr Dieseldorff to the Anthropological Society shows us a deity whose worship is indeed occasionally mentioned by historians and whose name is contained in the names of various Maya races, but of whom, on the whole, as of the mythologic forms of South American and Central American races generally, little enough is known. This deity is the bat god.

The bat in various Maya dialects is called Zotz. From this is derived the name Zotzil and Ah-zotzil, the "bat people", which name, on the one hand, belongs to a tribe who from ancient times to the present day have been settled in the vicinity of what is now San Cristobal de Chiapas—Mexicanized as Tzinacanteca, the people of Tzinacantlan, the "bat city"—and, on the other hand, it belongs to a tribe which is probably to be regarded as a portion of the great nation of the Cakchikels, the chief nation of southern Guatemala. Finally, there is still a Tzinacantan in the extreme southeast of Guatemala, within the region of the Sinca language.

Unfortunately, we are insufficiently informed concerning the language and traditions of the Zotzil of Chiapas, but we have some information in regard to the tribes of southern and western Guatemala. Here in early Christian times the natives themselves wrote down their traditions, and these traditions, the Popol Vuh[b] and the annals of Xahila[c] are precious documents. The only drawback is the difficulty of using them, because, on the one hand, we lack adequate lexicographic aids, but more especially because we have no exact definitions of the mythologic animals and the rest of the objects and expressions which have reference to the ancient folklore of these races.

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[a] E. Seler in Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, p. 577 and following, published in Zeitschrift für Ethnologie, 1894, pt. 6.

[b] Popol Vuh. Le livre sacré et les mythes de l'antiquité américaine, etc., par l'abbé Brasseur de Bourbourg. Paris, 1861.

[c] The Annals of the Cakchikels. Brinton's Library of Aboriginal American Literature, n. 6. Philadelphia, 1885.

An interesting passage in the Popol Vuh identifies the Kiches with the Toltecs, who are designated in the Popol Vuh as Yaqui,[a] and identifies Tohil, the god of the Kiche race, with Yolcuat-Quitzalcuat—that is, Youalli ehecatl,[b] Quetzalcoatl—the god of the Toltecs. While the three tribes of the Kiches had the same god, and the god of the Rabinals, though he was called differently, namely, Huntoh, was also the same, the Cakchikels differed from the Kiches both in their language and in the name of the god, whom they had brought with them from Tollan. The Cakchikel god was called Zotziha Chimalcan. After the name of this god, both the Chinamits, that is, the two royal families of the Cakchikels, were called Ah-po-zotzil and Ah-po-xa (hil).[c] We find the same name for this god once more in a second passage, and here, too, there is a more detailed statement concerning him. We read: "There was a tribe who drew fire from fire sticks. The Cakchikel god is called Zotzilaha Chamalcan and the bat (zotz) is his image.[d] He was therefore the god who controlled fire and who was conceived of in the likeness of a bat. I can not at present explain the name Chimalcan, or Chamalcan. Zotziha, or Zotzilaha, does not mean "bat", but "bat's house". I think this should suggest a mountain cavern, the interior of the earth; therefore a god of caverns, of the dark realms of earth. This is confirmed by a passage immediately preceding the one just quoted, where the figure appearing before the tribes in the dress of a bat is styled "this Xibalba". As a double name, Zotzilaha Chimalman, is given to the deity, and as likewise two families correspond to this deity and are said to reproduce his name, we must certainly suppose that the god had a twofold form, and that in contrast to the sinister form of the bat there was another, more pleasing one.

In other passages of the Popol Vuh the name Zotziha, "bat's house", is given, not as that of a god, but as one of the regions which must be traversed on the way to the deepest depths of the interior of the earth, the kingdom of darkness and death. Here dwells the Cama-Zotz, "the death bat", the great beast who slays all who come in his way, and who also bit off the head of the hero Hunahpu when he descended to the lower world. Such images of death play a great part in the mythology of Mexican and Central American races. But, I repeat, they are always conceived of and usually drawn with their counterpart.

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[a] No doubt the Mexican Yaque, "they go", that is, "the departing", "those who go away", a verbal form which is used with tolerable regularity in the texts in connection with death.

[b] Literally, "night [and] wind", a designation or epithet applied to the deity himself. But it is also especially given as the name of the god of the Nahuas, and represented in picture writing, it would seem, by the double image of the death god and the wind god leaning back to back.

[c] Popol Vuh, pp. 246, 248.

[d] Popol Vuh, p. 224. The passage is not correctly quoted by Brasseur de Bourbourg.

Such is the scanty information to be gleaned from literary records regarding the singular figure of the bat god; but it is enough to show that in this case we have to do only with a form of the deity of mountain caverns, of cave worship, concerning which definite information has been transmitted to us from the regions of the Isthmus and from the tribes living north and south of it. This deity however, apparently belonged only to the Maya races and to the Zapotec-Mixtec tribes, who were nearly allied to them in civilization, and possibly also in language, while to the Mexicans this cult was apparently foreign.

Now, when I pass to the pictorial representations of this deity, I am at once in a position, strange as it may seem, to refer to such drawings in Mexican picture writing; and this is of special importance, because there we are on more familiar ground. It is true, I am referring to manuscripts which doubtless originated in regions lying somewhat more to the south. The pictures to which I allude are taken from the Borgian, Vatican, and Fejérváry codices.

In each of these picture manuscripts there are a number of pages which invariably have four representations so combined that they form a whole, which, at the outset, leads us to conjecture that they were meant to correspond to the four cardinal points; that is, four periods of time coordinated with the cardinal points. In one of these representations (Borgian codex, pages 66 to 63), we find a perfect conglomerate of pictures on the four pages. In the others (Codex Vaticanus B, pages 65, 66; Bologna codex, pages 12, 13; Fejérváry codex, pages 12, 11; Codex Vaticanus B, pages 72 to 75, and Fejérváry codex, pages 4, 3) the separate representations seem to be copied to a certain extent from the above-mentioned pages of the Borgian codex.

Pages 66 to 63 of the Borgian codex have in the center a tree which is growing from the body of a person and on which a bird is sitting. Above this there is a deity offering sacrifice. On the left is a ball-player, a pair in copulation, and a throne, upon which lies the head ornament of a deity, always that of the deity of the succeeding page. To the right, at the top, we have the felling or killing of an animal or of a mythologic figure; below are Tzitzimime, figures plunging down from heaven, and a god producing fire by friction. Dates of years and days are also given, the sum total of which is 52 years and 260 days, that is, an entire cycle and a tonalamatl, divided into four equal parts.

The principal deity, the one offering sacrifice, on the first page is the sun god. This page may, therefore, correspond to the east. The god of the second page is the god of the earth, or of stone. He must correspond to the north. The chief deity on the third page

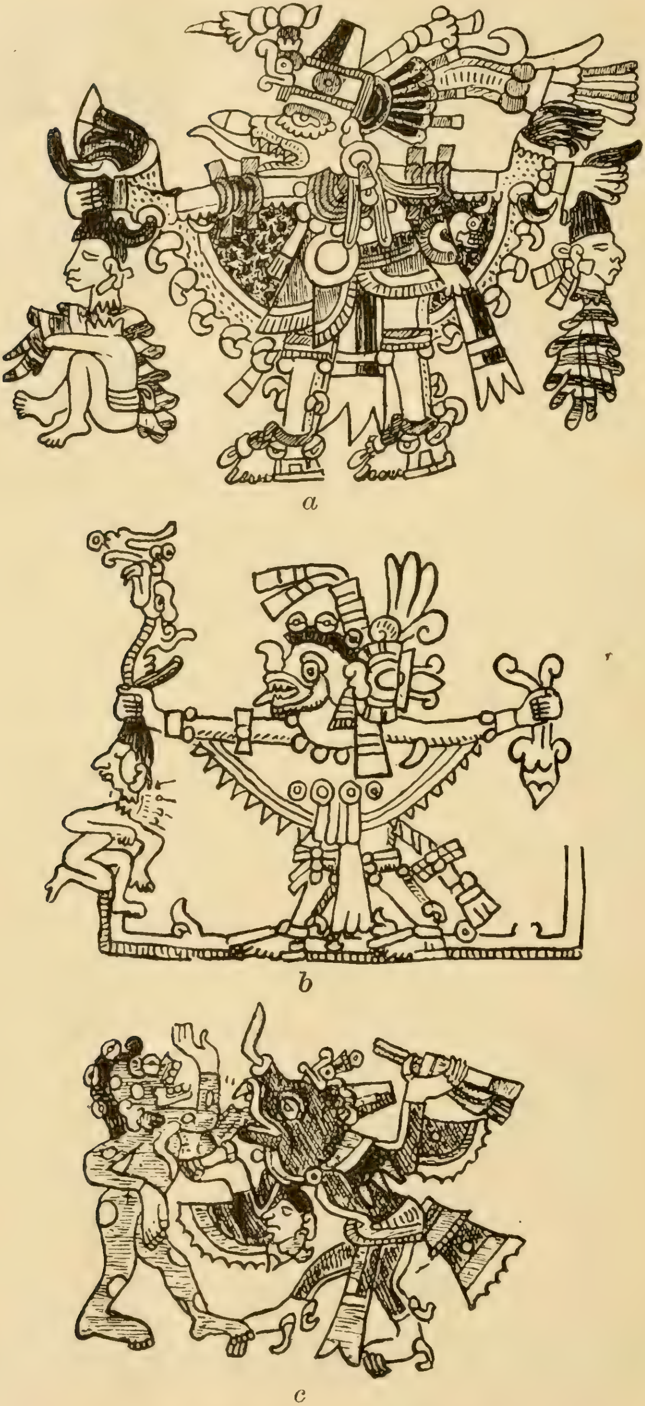

FIG. 49. Mexican figures of the bat god.

is the maize god. He corresponds to the west. The one on the last page is the death god, who corresponds to the south.

Among the figures on the first page at the right of the chief deity, in some degree expressive of the fatal qualities of the latter, and corresponding to the east, is the bat god beside the sun god. I reproduce the pictures of the god in *a* to *c*, figure 49, where *c* is taken from the encyclopedic representation in the Borgian codex, page 66, while *a* and *b* belong to separate series which have been copied out of it. The fact that we are dealing with the bat god is here expressed by the wing membrane stretched between the legs and arms, the claws on the extremities, the sharp teeth, and particularly by the membranous nose leaf, which only in *a* is converted into a stone knife. The dark painting of the wing membrane and the death's-head upon it in *a* (instead of the crossbones of the Dieseldorff picture) especially remind us of the picture on the Dieseldorff vase. We are reminded of the functions of Cama-zotz, the death bat, by the head which the beast has torn off and holds in his hand in *a* and *b*, while in *c* the beast devours the torn-out heart and the blood. It is worth noticing that in *a* and *c* the bat is drawn with the round cap and feather headdress of the wind god, while in *b*, in addition to the torn-off head, he grasps and stands upon a fire snake.

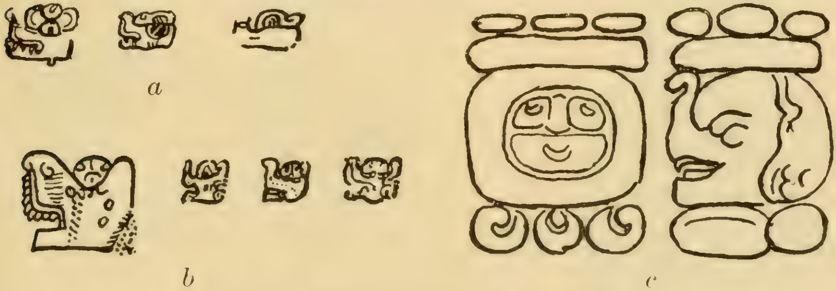

FIG. 50. Maya hieroglyphs of the bat god.

I now turn to the documents of the Maya races. The Mayas, in the strict sense, the inhabitants of Yucatan, designated one of their 18 uinals, that is, periods of 20 days, by the name of the bat-zotz (or zoɔ, according to Yucatec transcription). From the Relaciones of Bishop Landa and the Dresden manuscript I reproduce in *b*, figure 50, the picture of the bat as the designation of this period of time, which fell in the latter half of our September. That this designation was also known to the other Maya tribes we learn from the date (*c*, figure 50), compounded of the date of a day (8 Ahau) and a uinal date (the 8th of Zotz), which I copy from one of the Copan stelæ as given in Maudslay's great work.[a] In the same way the uinal Zotz is given, beyond a doubt, on the altar slabs of Palenque; for instance, on the altar slab of the Temple of the Cross, number 1 (according to Désiré Charnay's designation), where A–16 and B–16, belonging together, give the combined date 1 Ahau, 13 Zotz.

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[a] Biologia Centrali-Americana. Archæology.

But I also think that I recognize the hieroglyphs of the bat god among a series of 20 deities represented in hieroglyphs on pages 46 to 50 of the Dresden manuscript, accompanying a period of 2×52 years divided into five large sections, each of which is again divided into sections of 90, 250, 8, and 236 days. From this series of 20 deities 5 are copied on page 24; they are those which, at regular intervals, occupy the last place in each of the five divisions. In this way those seem to have been made prominent which are especially significant for each of the five divisions. Among them occurs the hieroglyph, which—with a note of interrogation, it is true—I claim as the hieroglyph of the bat god (see *a*, figure 50).

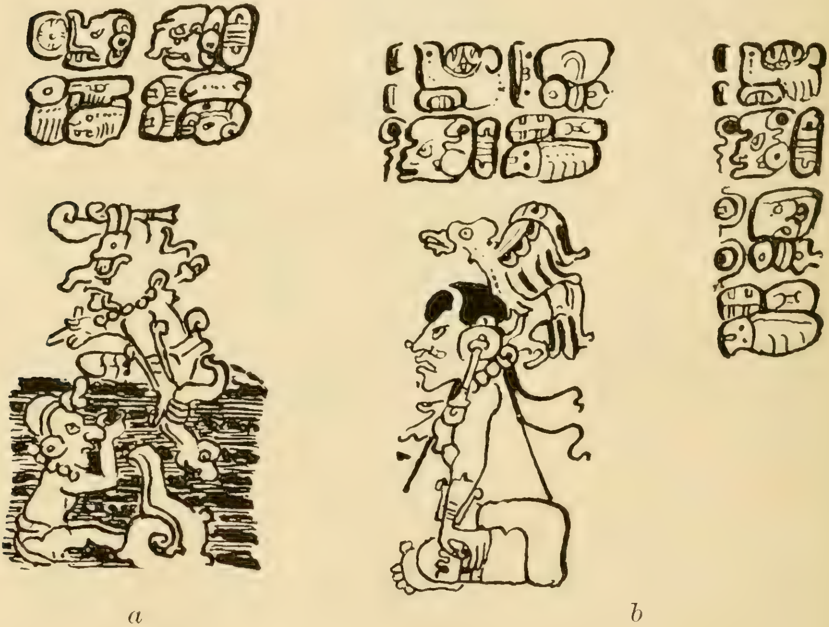

FIG. 51. Maya hieroglyphs of the bat god.

I think that I also recognize the bat god in the initial hieroglyph of the group which I reproduce in *a*, figure 51. The character kin, "sun", is before the mouth of the beast. With reference to a hieroglyph which I shall discuss later I am tempted to interpret it as a swallowing up of light, that is, an obscuring of the sun.

Finally, it has occurred to me that possibly the initial hieroglyph of the two groups which I give in *b*, and which, on account of the picture accompanying it, I formerly explained as the hieroglyph of a bird of prey, may also refer to the bat. For we have here, as in the hieroglyph of the uinal Zotz, the character akbal, "night", over the eye, as an eyebrow. Even the bat ears and the wrinkled corner of the mouth seem to be present in the hieroglyph. Instead of the teeth, the hieroglyph of a stone knife is given here. This may indicate the creature's sharp teeth, while it may possibly also have a symbolic meaning. The stone knife symbolizes the power of the sun's beams to inflict injury. In Mexican representations the monster of the night swallows a stone knife.

The bat is frequently met with on the Copan reliefs. An entire figure of the deity, which I give in *a*, figure 52, can be recognized on altar T (Maudslay's nomenclature) a huge reptilian figure, with a head resembling an alligator's and with hands, between whose outstretched fore and hind legs various deities or mythologic figures are represented. The bat here begins the series of personages represented on the east side, while on the west side, opposite to it, a bird with speckled feathers and parrot like beak is the first of the series—possibly the cakix, the Arara, worshipped as a deity by the Ah-zotzil clan, "the bat people", who were allied to the Cakchikels.[a]

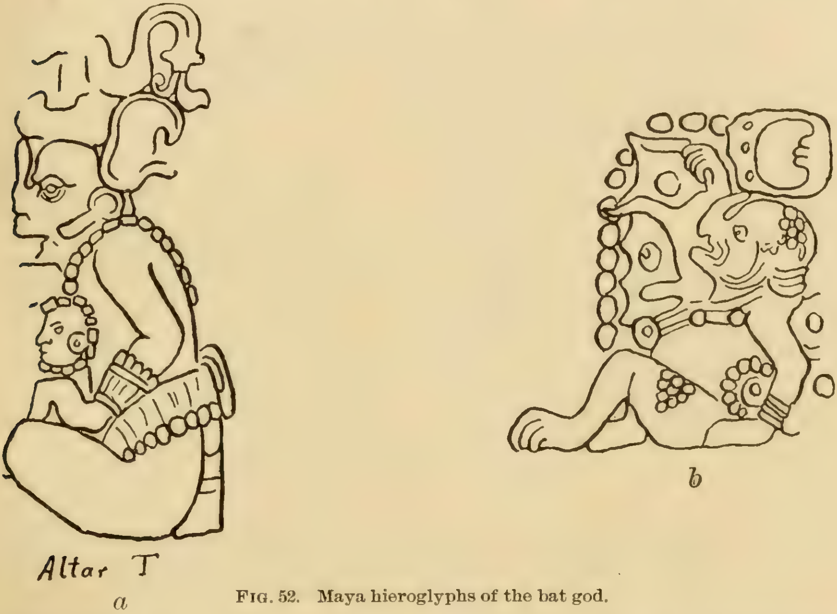

FIG. 52. Maya hieroglyphs of the bat god.

The bat occurs with greatest frequency in a hieroglyph some forms of which I have given in *a*, figure 53. Besides the head of the bat, which is sometimes very characteristically reproduced, with its membranous nose leaf and hairy ear, the double element ben-ik is also present in this hieroglyph, which perhaps—for it also occurs with others in the hieroglyph of the sun god—is an expression of that which the Mayas designated by u pop u cam, and the Mexicans by i-petl-i-icpal, "his mat", "his (royal) seat", that is, for dominion. Lastly, there is yet another element present in the hieroglyph, which, taking other cases of its occurrence into consideration, I can only explain as a stream of blood flowing from the bat's mouth, derived from an element which I have shown to possess the phonetic value of kan, "yellow",[a] and to be used as a substitute for kin, "sun".[b] In other words, I regard this element of the hieroglyph as nothing else than an expression of that characteristic of the bat god which is set forth in the name Cama-zotz and in the pictures of the Mexican manuscripts, especially *c*, figure 49, that is, the destruction of life, the devouring of light. We are familiar with this element in other hieroglyphs, particularly in that of a god who is the fifth in the series of twenty deities in the Dresden manuscript, and who undoubtedly is a god of the earth (*b*, figure 53). It has long since been remarked that the head of this deity reappears in the conventional sign for the cardinal point of the north. But, while in the hieroglyph of the god the head of the god is represented, according to my conception, as devouring light or life, in the hieroglyph of the cardinal point the

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[a] Xahila's Cakchikel-Annalen, place cited, sec. 10.

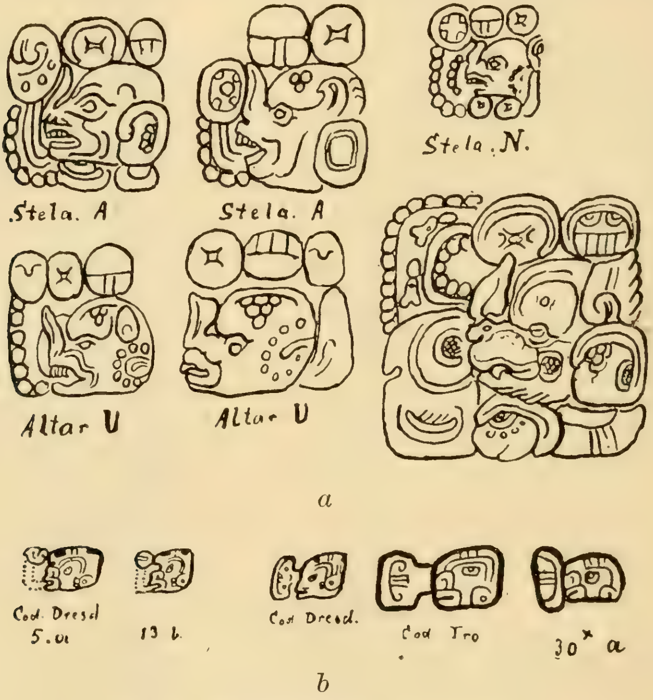

FIG. 53. Maya hieroglyphs of the bat god.

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[a] Zeitschrift für Ethnologie, v. 23, pp. 108–9.

[b] Science, January 6, 1893.

head of the god is combined with an open jaw, which is occasionally replaced by a stone knife, *b*. Hence the correspondence to which I allude above is also apparent here.

In conclusion, I give in *b*, figure 52, a very remarkable form of this hieroglyph which occurs on Stela D of Copan (Maudslay's nomenclature). This stela is peculiar inasmuch as the hieroglyphic elements, which elsewhere are reproduced in conventional characters, are here carried out in full figure. This particular stela is, therefore, of the first importance as an aid to the discovery of the true meaning of these elements. In *b*, figure 52, the form of the bat, the nose leaf, and the wing membrane are distinctly recognizable. The element which I interpret as the devouring of light is indicated by a series of drops and a piece that looks like a ring cut out of a shell. This element, which answers to kan, or kin, also has the same form in the hieroglyphs reproduced in *a*, figure 53. The Ben-Ik group is wanting in *b*, figure 53, probably because it expresses only a secondary meaning.

On the heads and the body in *a*, figure 52, as in several of the bat heads brought together in *a*, figure 53, the elements of the day sign Cauac are given, which in the last of the hieroglyphs in *a*, figure 53, is seen in full below the bat's ear. The character Cauac corresponds to the Mexican Quiauitl, "rain", and to Ayotl, "the tortoise", of the Guatemalan calendar. It combines within itself, as I have shown elsewhere,[a] the idea of opaque covering and of stone.

We have in the vase excavated by Mr Dieseldorff a very characteristic figure of the bat god. In this connection, I would like to mention that the god described by Dieseldorff as having been found as a decoration on pottery, the god in the snail shell,[b] does not answer to the old god, the sixteenth in the Dresden manuscript, but rather to the third one of the gods represented on plates 4 to 10 of the Dresden manuscript. If I were still somewhat uncertain as to whether the bat god can be recognized among the five deities given in the hieroglyphs on page 24 of the Dresden manuscript, the god in the snail shell is unquestionably represented. As I am forced to conclude from the other places where it occurs that the latter god corresponds to the south, so the bat god, if he is really represented by hieroglyph *a*, figure 50, must answer to the cardinal point of the east. This would form a fresh link and furnish another proof, either that even in slight details there existed a fundamental agreement between the mythic representations of the Central American and Mexican peoples, or that with the calendar and everything connected with it an exchange or dissemination of such mythic elements took place throughout the whole of the ancient cultural region.

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[a] Zeitschrift für Ethnologie, v. 23, p. 132.

[b] Zeitschrift für Ethnologie, v. 25, Verhandlungen, 1893, pp. 379 and 548.

WALL PAINTINGS OF MITLA

A MEXICAN PICTURE WRITING IN FRESCO

BY

EDUARD SELER

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WALL PAINTINGS OF MITLA[a]

By Eduard Seler

DESCRIPTION OF MITLA

In the broad valley of Tlacolula, which, rising in a succession of terraces, inclosed by mountain ranges, and intersected by flat-topped ridges and isolated peaks, forms the eastern part of the wide and beautiful Valle de Oaxaca, lies the place which is called Yoopaa,[b] or Lioo-baa, by the Zapotecs, and Mictlan by the Mexicans. It is situated near the highest eastern end of the valley, at the foot of the mountain chain which separates it from the valley of Villa Alta and the mountainous regions of the Mixes. The two names of this place have the same meaning, " burial place ", or " place of the dead ". It was the burial city of the Zapotec kings and priests.

It was a custom among the Zapotecs and the kindred tribes, Mixtecs, Cuicatecs, and their neighbors, the Mixes, to bury their dead chiefs and nobles in caves. There was probably a double reason for this custom. Throughout the world caves have been looked upon as entrances to the interior of the earth, to the underworld, to the kingdom of the dead. Among the Zapotecs and Mixtecs, however, there existed also the belief, which is met with among several other aboriginal tribes of America, that the ancestors of their race had risen from the inner depths of the earth to the light of the sun. Thus it was, in a certain way, the realm of the forefathers, their ancient home, in which they buried their dead when they laid them to rest in the sacred caves.

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[a] Wandmalereien von Mitla, eine mexikanischen Bilderschrift in fresko, nach eigenen an Ort und Stelle aufgenommenen Zeichnungen, herausgegeben und erläutert von Dr Eduard Seler. Berlin, 1895. The dedication may be translated as follows: To His Excellency the Duke of Loubat, the generous promoter of the infant science of the new continent, these results of earlier journeys and studies are gratefully dedicated by the author. Steglitz, July, 1895.

[b] Burgoa translates it Lugar de Descanso, " resting place ". Indeed the meaning " resting ", " taking breath ", is contained in the root paa. For paa, and the allied form pee, means " breeze ", " wind ", " breath ", and the extended meaning " happiness ", " blessedness ", " peace ", " wealth ", can doubtless be traced back to this root. Paa also contains, by implication, the meaning " burial place " ; paa or queto-paa, sepultura, " tomb " ; paaquie, sepultura de piedra, " stone tomb " ; paa-táo, sepultura labrada á poste, a " sepulcher made of posts " ; and it is perhaps most natural to accept this especial meaning here.

In the country of the Mixtecs the cave of Chalcatongo, situated on a high mountain, served as a burial place for their kings and great men, and Father Burgoa relates with indignation how, even in later Christian times, a cacique, esteemed by the priests for his godly life, accepted the last sacraments of the Christian Church and yet left behind him the behest that his earthly remains should be buried in that cave.[a] The extensive caves in the limestone mountains (whence came its names of Yoopaa and Mictlan) imparted to this place its sacred character and caused the Zapotecs to choose it for the burial place of their kings and priests. There were also smaller caves in the place, called Zeetoba, "second burial place", or Queuiquije-zaa, "the palace on the rock"; in Mexican, Teticpac. It served as a burial place of the second (subordinate) rank.

The peculiar notion connected with caves in specially favored situations, namely, that they indicated the places where the ancestors of the race had come forth from the earth, was, without doubt, the reason why Yoopaa, or Mictlan, was not only a burial place, but also the most important sanctuary of the country and the residence of the high priest. He was called Uija-tao, "great prophet", and was treated by the Zapotec kings, as Father Burgoa relates, with such submissive veneration and regarded as being so closely connected with the gods, being the direct distributor of their gracious gifts, as well as of their punishments, that the kings turned to him in all matters and in every need, and carried out his commands with the strictest obedience, even at the cost of their blood and their lives.[b]

It was in keeping with the twofold significance of the place that here in Yoopaa, or Mictlan, the most important and magnificent edifices were erected, and that here every form of art was employed which the ancient inhabitants of this country could command. Mictlan was doubtless not the only place in the Zapotec country where magnificent buildings were to be found. A beautifully sculptured tomb has been discovered in Xoxo, not far from Oaxaca.[c] Moreover on the mountain citadel of Tlacolula and in Teotitlan del Valle we have found fragments of wall facings of stone mosaic very similar to the famous mosaics of Mitla which represent geometric designs. There are undoubtedly similar buildings to be found in other parts of this country, which as yet has been little explored. The buildings of Mitla, however, have always been distinguished for their size, number, and magnificence, and we find in the very earliest reports enthusiastic and admiring descriptions of them.

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[a] P. Burgoa, Segunda Parte de la Historia de la Provincia de Predicadores de Guaxaca, Mexico, 1674, chap. 29.

[b] Burgoa, work cited, chap. 53.

[c] See the description in Compte rendu du Congrès international des Américanistes, 7^{me} session, Berlin, 1888, p. 126 et seq. There I have also given a small sketch of the tomb.

Father Torquemada writes:[a]

> When some monks of my order, the Franciscan, passed, preaching and shriving, through the province of Zapoteca, whose capital city is Tehuantepec,[b] they came to a village which was called Mictlan, that is, "underworld (hell)". Besides mentioning the large number of people in the village they told of buildings which were prouder and more magnificent than any which they had hitherto seen in New Spain. Among them was a temple of the evil spirit and living rooms for his demoniacal servants, and among other fine things there was a hall with ornamented panels, which were constructed of stone in a variety of arabesques and other very remarkable designs. There were doorways there, each one of which was built of but three stones, two upright at the sides and one across them, in such a manner that, although these doorways were very high and broad, the stones sufficed for their entire construction. They were so thick and broad that we were assured there were few like them. There was another hall in these buildings, or rectangular temples, which was erected entirely on round stone pillars, very high and very thick, so thick that two grown men could scarcely encircle them with their arms, nor could one of them reach the finger tips of the other. These pillars were all in one piece and, it was said, the whole shaft of a pillar measured 5 ells from top to bottom, and they were very much like those of the church of Santa Maria Maggiore in Rome, very skillfully made and polished.

Father Burgoa gives a more exact description.[c] He says:

> The palace of the living and of the dead was built for the use of this one (the high priest of the Zapotecs). * * * They built this magnificent house or pantheon in the shape of a rectangle, with portions rising above the earth and portions built down into the earth, the latter in the hole or cavity which was found below the surface of the earth, and ingeniously made the chambers of equal size by the manner of joining them, leaving a spacious court in the middle; and in order to secure four equal chambers they accomplished what barbarian heathen (as they were) could only achieve by the powers and skill of an architect. It is not known in what stone pit they quarried the pillars, which are so thick that two men can scarcely encircle them with their arms. These are, to be sure, mere shafts without capital or pedestal, but they are wonderfully regular and smooth, and they are about 5 ells high and in one piece. These served to support the roof, which consists of stone slabs instead of beams. The slabs are about 2 ells long, 1 ell broad, and half an ell thick, extending from pillar to pillar. The pillars stand in a row, one behind the other, in order to receive the weight. The stone slabs are so regular and so exactly fitted that, without any mortar or cement at the joints, they resemble mortised beams. The four rooms, which are very spacious, are arranged in exactly the same way and covered with the same kind of roofing. But in the construction of the walls the greatest architects of the earth have been surpassed, as I have not found this kind of architecture described either among

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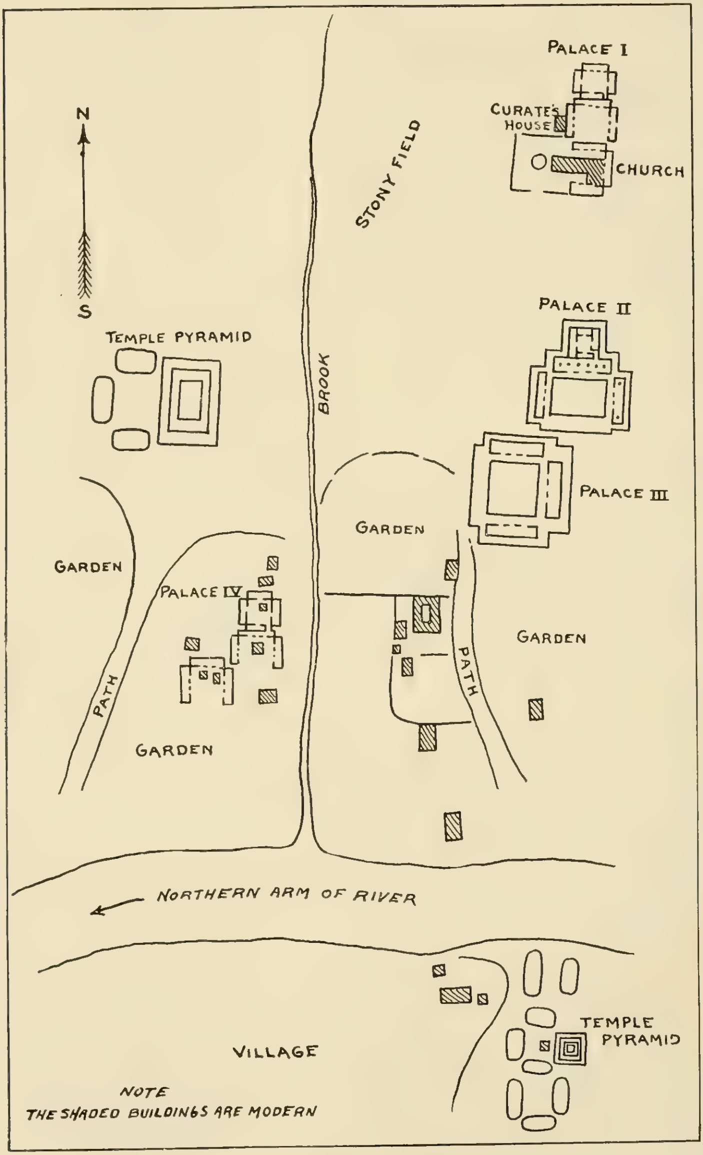
[a] Monarquia Indiana, v. 3, chap. 29.

[b] Without doubt this refers to Father Martin de Valencia and his eight companions, who went to Tehuantepec to embark there for China, and who stayed at the former place seven months. Since they could obtain no ships, they went back to Mexico. See Motolinia, Historia de los Indios de la Nueva España, tratado 3, chap. 5; Mendieta, Historia Ecclesiastica Indiana, v. 4, chap. 10. In both places a description is given of the architecture of Mitla, which corresponds in essential points with the description of Torquemada quoted above; except that Mendieta calls the church in Rome Santa Maria la Redonda, and in Motolina this comparison is wholly wanting.

[c] Work cited, chap. 53. That which he states, he says, he knows from old papers which have come into his hands and from traditions current among aged Indians.

the Egyptians or among the Greeks; for they begin at the base with a narrow outline and, as the structure rises in height, spread out in wide copings at the top, so that the upper part exceeds the base in breadth and looks as if it would fall over. The inner side of the walls consists of a mortar or stucco of such hardness that no one knows with what kind of liquid it could have been mixed. The outside is of such extraordinary workmanship that on a masonry wall about an ell in height there are placed stone slabs with a projecting edge, which form the support for an endless number of small white stones, the smallest of which are a sixth of an ell long, half as broad, and a quarter as thick, and which are as smooth and regular as if they had all come from one mold. They had so many of these stones that, setting them in, one beside the other, they formed with them a large number of different beautiful geometric designs, each an ell broad and running the whole length of the wall, each varying in pattern up to the crowning piece, which was the finest of all. And what has always seemed inexplicable to the greatest architects is the adjustment of these little stones without a single handful of mortar, and the fact that without tools, with nothing but hard stones and sand, they could achieve such solid work that, though the whole structure is very old and no one knows who made it, it has been preserved until the present day.

I carefully examined these monuments some thirty years ago in the chambers above ground, which are constructed of the same size and in the same way as those below ground and, though single pieces were in ruins because some stones had become loosened, there was still much to admire. The doorways were very large, the sides of each being of single stones of the same thickness as the wall, and the lintel was made out of another stone which held the two lower ones together at the top. There were four chambers above ground and four below. The latter were arranged according to their purpose in such a way that one front chamber served as chapel and sanctuary for the idols, which were placed on a great stone which served as an altar. And for the more important feasts which they celebrated with sacrifices, or at the burial of a king or great lord, the high priest instructed the lesser priests or the subordinate temple officials who served him to prepare the chapel and his vestments and a large quantity of the incense used by them. And then he descended with a great retinue, while none of the common people saw him or dared to look in his face, convinced that if they did so they would fall dead to the earth as a punishment for their boldness. And when he entered the chapel they put on him a long white cotton garment made like an alb, and over that a garment shaped like a dalmatic, which was embroidered with pictures of wild beasts and birds; and they put a cap on his head, and on his feet a kind of shoe woven of many colored feathers. And when he had put on these garments he walked with solemn mien and measured step to the altar, bowed low before the idols, renewed the incense, and then in quite unintelligible murmurs (muy entre dientes) he began to converse with these images, these depositories of infernal spirits, and continued in this sort of prayer with hideous grimaces and writhings, uttering inarticulate sounds, which filled all present with fear and terror, till he came out of that diabolical trance and told those standing around the lies and fabrications which the spirit had imparted to him or which he had invented himself. When human beings were sacrificed the ceremonies were multiplied, and the assistants of the high priest stretched the victim out upon a large stone, baring his breast, which they tore open with a great stone knife, while the body writhed in fearful convulsions and they laid the heart bare, ripping it out, and with it the soul, which the devil took, while they carried the heart to the high priest that he might offer it to the idols by holding it to their mouths, among other ceremonies; and the body was thrown into the burial place of their "blessed", as


PALACE I
CURATE'S HOUSE
CHURCH
STONY FIELD
N
S
PALACE II
TEMPLE PYRAMID
BROOK
PALACE III
GARDEN
GARDEN
PALACE IV
GARDEN
PATH
PATH
GARDEN
NORTHERN ARM OF RIVER
TEMPLE PYRAMID
VILLAGE
NOTE
THE SHADED BUILDINGS ARE MODERN

PLAN OF MITLA RUINS, OAXACA

they called them. And if after the sacrifice he felt inclined to detain those who begged any favor he sent them word by the subordinate priests not to leave their houses till their gods were appeased, and he commanded them to do penance meanwhile, to fast and to speak with no woman, so that, until this father of sin had interceded for the absolution of the penitents and had declared the gods appeased they did not dare to cross their thresholds.

The second (underground) chamber was the burial place of these high priests, the third that of the kings of Theozapotlan, whom they brought thither richly dressed in their best attire, feathers, jewels, golden necklaces, and precious stones, placing a shield in the left hand and a javelin in the right, just as they used them in war. And at their burial rites great mourning prevailed; the instruments which were played made mournful sounds; and with loud wailing and continuous sobbing they chanted the life and exploits of their lord until they laid him on the structure which they had prepared for this purpose.

The last (underground) chamber had a second door at the rear, which led to a dark and grewsome room. This was closed with a stone slab, which occupied the whole entrance. Through this door they threw the bodies of the victims and of the great lords and chieftains who had fallen in battle, and they brought them from the spot where they fell, even when it was very far off, to this burial place; and so great was the barbarous infatuation of these Indians that, in the belief of the happy life which awaited them, many who were oppressed by diseases or hardships begged this infamous priest to accept them as living sacrifices and allow them to enter through that portal and roam about in the dark interior of the mountain, to seek the great feasting places of their forefathers. And when anyone obtained this favor the servants of the high priest led him thither with special ceremonies, and after they had allowed him to enter through the small door they rolled the stone before it again and took leave of him, and the unhappy man, wandering in that abyss of darkness, died of hunger and thirst, beginning already in life the pain of his damnation; and on account of this horrible abyss they called this village Liyobaa.

When later there fell upon these people the light of the Gospel, its servants took much trouble to instruct them and to find out whether this error, common to all these nations, still prevailed, and they learned from the stories which had been handed down that all were convinced that this damp cavern extended more than 30 leagues underground, and that its roof was supported by pillars. And there were people, zealous prelates anxious for knowledge, who, in order to convince these ignorant people of their error, went into this cave accompanied by a large number of people bearing lighted torches and firebrands, and descended several large steps. And they soon came upon many great buttresses which formed a kind of street. They had prudently brought a quantity of rope with them to use as guiding lines, that they might not lose themselves in this confusing labyrinth. And the putrefaction and the bad odor and the dampness of the earth were very great and there was also a cold wind which blew out their torches. And after they had gone a short distance, fearing to be overpowered by the stench or to step on poisonous reptiles, of which some had been seen, they resolved to go out again and to completely wall up this back door of hell. The four buildings above ground were the only ones which still remained open, and they had a court and chambers like those underground; and the ruins of these have lasted even to the present day.

One of the rooms above ground was the palace of the high priest, where he sat and slept, for the apartment offered room and opportunity for everything. The throne was like a high cushion with a high back to lean against, all of tiger skin, stuffed entirely with delicate feathers or with fine grass which was used for this purpose. The other seats were smaller, even when the king came to visit him. The authority of this devilish priest was so great that there was no one who dared to cross the court, and to avoid this the other three chambers had doors in the rear, through which even the kings entered. For this purpose they had alleys and passageways on the outside above and below, by which people could enter and go out when they came to see the high priest.

These priests never married, nor did they hold intercourse with women. Only, at certain feasts, which they celebrated with great banqueting and much drunkenness, the kings brought to them the unmarried daughters of the chieftains, and if one of these became pregnant she was taken to a retired spot until her confinement, so that if a son should be born he could be brought up as the successor of the priest in his office, for this succession always fell to the son or nearest relative and was never elective.

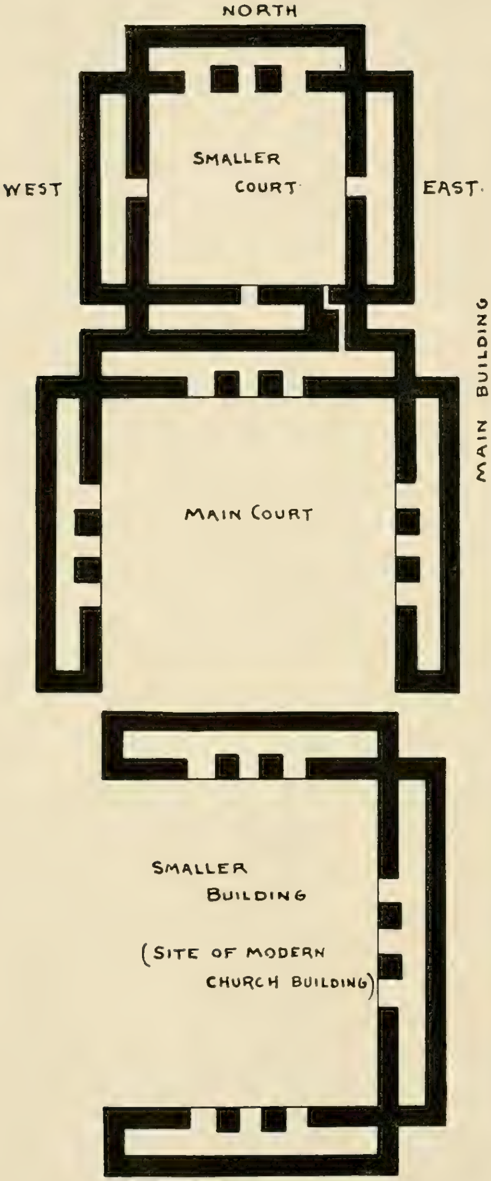
The second chamber above ground was that of the priests and the assistants of the high priests. The third was that of the king when he came. The fourth was that of the other chieftains and captains, and though the space was small for so great a number and for so many different families, yet they accommodated themselves to each other out of respect for the place and avoided dissensions and factions. Furthermore, there was no other administration of justice in this place than that of the high priest, to whose unlimited power all bowed.

All the rooms were clean and well furnished with mats. It was not the custom to sleep on bedsteads, however great a lord might be. They used very tastefully braided mats, which were spread on the floor, and soft skins of animals and delicate fabrics for coverings. Their food consisted usually of animals killed in the hunt; deer, rabbits, armadillos, etc., and also birds, which they killed with snares or arrows. The bread, made of their maize, was white and well kneaded. Their drinks were always cold, made of ground chocolate, which was mixed with water and pounded maize. Other drinks were made of pulpy and of crushed fruits, which were then mixed with the intoxicating drink prepared from the agave, for since the common people were forbidden the use of intoxicating drinks, there was always an abundance of these on hand.

This entire account of Mitla [the father adds in conclusion] was added to his history that he might be faithful to his promise, and although these things were, of course, full of superstition and impious error, still they were the most important and intelligent manifestations of this nation which had fallen under his observation.

I have translated and quoted this passage at length because it contains the account of an eyewitness who saw the monuments when they were still in a tolerably intact condition, furnished still with the roof, which is now entirely gone; because this passage is the only one I know of, dating from ancient times, which gives an explanation concerning the purpose and significance of the different buildings; and because the book from which the quotation is taken is extremely rare. In spite of much inquiry, I have heard of no library in Germany or Austria which contains the work.

The position of the buildings as they stand to-day is seen on the plan given in plate XXII. This is drawn, according to a plan made by the well-known architect, E. Mühlenpfordt, in the year 1831, with the addition of some details which were added from the results of personal observations and after a recent drawing by Mr J. Leon. It is


NORTH
SMALLER COURT
WEST
EAST
MAIN BUILDING
MAIN COURT
SMALLER BUILDING
(SITE OF MODERN CHURCH BUILDING)

GROUND PLAN OF PALACE I, MITLA

seen that there are in all three groups of the principal buildings, which extend in a slight curve from the height down to the river. I have numbered the first I. For practical reasons I have numbered the second II and III. The third is designated IV. Inside the arc formed by these groups of buildings, but not near the center, lies a terraced pyramid, an ancient temple without doubt, which serves now as a cemetery and has a chapel on its upper platform. A court formed by broad, rampartlike elevations lies behind it. On the other side of the river there is a similar, smaller pyramid with several courts formed by rampartlike elevations.

Each of the three chief groups of buildings, I, II–III, and IV, consists of a main building and an adjoining building (see the ground plan of palace I, plate XXIII). The main structure has a courtyard lying according to the four points of the compass, inclosed on three sides by buildings. Of these, the one situated on the north side of the court is the largest and most beautifully finished, and is connected by means of a narrow angular passage with a smaller adjoining court, which is surrounded on all four sides by narrow, corridorlike chambers, and is completely closed from the outside.

The position of the adjoining building varies somewhat. While in I it lies directly in front of the main building, those of III and IV lie a little to one side. These adjoining buildings also surround three sides of a court whose four sides face the four points of the compass. While, however, in the main buildings, the south side of the court remains open, in the adjoining buildings that is the case only in IV, I and III being open toward the west.

The church and the priest's house are built into palace I. Palace II is the best preserved and the most beautiful. It contains in the principal room, situated on the north side of the court, the row of six large monolithic pillars, which have always been considered the most remarkable proof of the technical skill of the ancient Zapotecs. As palace IV lies nearest the village it has been most despoiled, in order to furnish stones and other building materials for the huts of the present village. Only a few remains of masonry scattered about the garden are now left of this palace.

If an attempt is made to identify the still remaining buildings after Burgoa's description, a certain difficulty arises at the very outset. Burgoa speaks of "four chambers" (quadras) or "halls" (salas), and says that remains of them had been found partly above ground (altos) and partly underground (bajos), and that the former were like the latter in size and the manner of their decoration.

He furthermore says that one of the chambers found underground, the front one, had been a temple, sacrarium, or place for keeping the idols; another had served as burial place for the high priest; the third as the tomb of the kings and nobles of the realm;

and the fourth had been connected with the great cave, whither they were accustomed to bring the bodies of the victims of sacrifice and of the chiefs who had fallen in battle. The chambers found above ground, he said, had served as dwellings, one for the high priest, the second for the rest of the priesthood, the third for the king, and the fourth for the families of the nobles who came to Mitla in the retinue of the king.

Here, first of all, it is clear that "quadras" or "salas" could not have been used to designate the entire groups of buildings forming the palaces, for there are only three, not four, of these. Furthermore, we can not take literally the statement that the underground chambers were exactly like those above ground in the manner of decoration and in size. The only building in which a crypt has been preserved, or rather excavated, is the larger eastern building of III. Here, however, the crypt does not have the form of the chamber above ground. The latter is an oblong rectangle in shape. The crypt is built in the shape of a cross, exactly like the crypt which was discovered in the village of Xaaga, three-fourths of a league from Mitla, and can still be seen. I think that Burgoa's statements refer only to the different parts of one group of palace buildings; and there seems to be the greatest probability that Burgoa had in mind group II–III. In this one the hall with pillars lying on the north side of the main court of II might have formed, with its adjoining court, the dwelling of the high priest, the Uija-tao, and under it must have been the crypt that was "in front", where the idols stood and where the high priest received his inspirations. The building situated on the west side of the main court might have contained, above, the living rooms for the priesthood and, below, the burial place for the high priest. The building situated opposite, on the east side, might have been the dwelling and burial place of the king. We may probably consider the whole of palace III as the building where the majority of the nobles were quartered and where, at the rear of the crypt of the main building, a door led into the cave already described. Then this entrance would have been directly opposite the pyramid, on whose upper platform the sacrifices were doubtless performed.

If this is the case, we must consider the three palace groups as undoubtedly constructed on a uniform plan, the individual buildings being designed for exactly similar purposes. We must, then, necessarily conclude further that there was in Mitla not one high priest only, but that besides him, perhaps subordinated to him, there must have been at least two other chief priests. This conclusion, however, is not unnatural or forced. On the contrary, this idea is very readily suggested by a comparison with the corresponding conditions in the capital, Mexico. Besides, Burgoa speaks plainly in another place of several high priests, Uija-tao, whom the king of

Tehuantepec, Cocijo-pij, had summoned to him from Mictlan.[a] We also know that the "Zapotecos Serranos", who lived on the other side of the mountains, in the forest valleys of Villa Alta, had their special priests.[b]

The appearance which the outer and inner façades of these palaces present, with their projections and courses of coping and the wonderful ornamentation produced by geometric designs executed in raised stonework, is shown by the photographs which are reproduced on plates XXV to XXX. The pictures were taken in 1890 by order of the commission of the state of Oaxaca for the world's exposition in Paris. The number of designs in the panels of the wall is limited. Those which my wife and I observed in Mitla are reproduced in plates XXXI and XXXII from original drawings by my wife. A few additional designs are reproduced there which we saw in the crypt of Xaaga and in the neighborhood of the utterly ruined temple of Xaquie, or Teotitlan del Valle. As to the technic of these designs, one might think, according to Burgoa's description quoted above, that they were formed of small stones which had been set in a mass of stucco. That is by no means the case. The blocks, cut out of a light-colored tufaceous stone, laid one upon the other, form the outer and inner surface of the thick walls, which consist chiefly of mortar. They were sculptured on the outer side, perhaps even in their present position, in such a manner that a single stone of this kind shows on its exterior face a sunken and a projecting surface, the lines of demarcation running in steps, zigzag lines, or curves, according to the nature of the design of which they are a part. With this method of construction it is plain that no single portion can crumble and become detached, and therefore the patterns are still, in the main, as clear and unchanged as they were centuries ago. The height of the projection above the sunken plane, which averages about 3 cm., and the extraordinarily sharp and perpendicular outline between the raised parts and the background cause the patterns to stand out with remarkable clearness and distinctness. In the background we find everywhere traces of red coloring, while the raised parts seem to have been left white, an inference also to be drawn from Burgoa's description, where he speaks of "small white stones". I need hardly point out that this contrast of color must have enhanced the effect of the pattern still more.

Now, while the exterior aspect of these palaces and the ornamentation in raised geometric designs have been frequently depicted and described in former times, few of the authors who have hitherto written about Mitla have paid special attention to the frescoes which were over the middle door of each side of the adjacent courts, and portions of which are still to be seen. A manuscript atlas by the German architect E. Mühlenpfordt, which is preserved in the Instituto Publico at Oaxaca and has been reproduced in Peñafiel's[a] great illustrated publication, is the only work in which, together with exact ground plans and elevations of the palaces, specimens are to be found of the mural paintings from each of the two courts where these paintings exist. It was Mr Peñafiel who called my attention to these paintings, and I devoted eleven days during my stay in Mitla with my wife, in June, 1888, to copying them, as far as they were still visible, so as to rescue, in sketches at least, what was still to be saved. The originals themselves will scarcely withstand much longer the effects of the weather and the consequences of neglect. Just a few months before my arrival in Mitla a large and essential part of the paintings was knocked down incident to the important building of a pigsty in the court of the first palace, which has served for a long time and still serves as the stable of the priest's dwelling. The rest of the paintings are everywhere crumbling.

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[a] Burgoa, work cited, chap. 72: Llevando de el gran adoratorio de Mictla los sacerdotes mayores como pontifices, à quienes llaman Huija-too, en su lengua, que quiere dezir "grande atalaya y el que lo vè todo" y otros sacerdotes menores que llaman copa vitoo "guarda de los Dioses" ("Bringing from the great temple of Mictla the high priests as pontifices, whom they call in their language Huija-too, which means 'great guard and he who sees all', and other lesser priests whom they call copa vitoo, 'guardians of the gods'").

[b] Burgoa, work cited, chap. 56.

The paintings are found, as has been mentioned, in the closed courtyards adjoining the palaces, which are accessible only by means of a narrow, angular passageway leading from the main building. Each side of these courts (compare the elevation on plate XXIV) has a doorway in the center and, over it, a narrow, rectangular, recessed panel. Then follows a narrow, sunken band which extends the whole length of the wall. Over this again there are three broader and shorter recesses cut into the wall, the middle one of which projects beyond the two on the sides. The doors in the center lead to narrow gallaries which surround the court on the four sides. On the south wall of the court, at one side of the principal doorway, is the opening of the angular passageway which joins the principal chamber of the corresponding palace with this closed adjoining court. The north wall of the adjacent court of palace I has three main entrances instead of one, and above these stretches evenly the narrow recessed panel considerably lengthened. The three upper shorter and broader recesses on all four sides of the court are filled with the characteristic geometric designs executed in raised stonework. The lower narrow, recessed panels directly over the doorway have a coating of fine stucco, and it is this which is covered with paintings, in which the white figures contrast with the painted red background.

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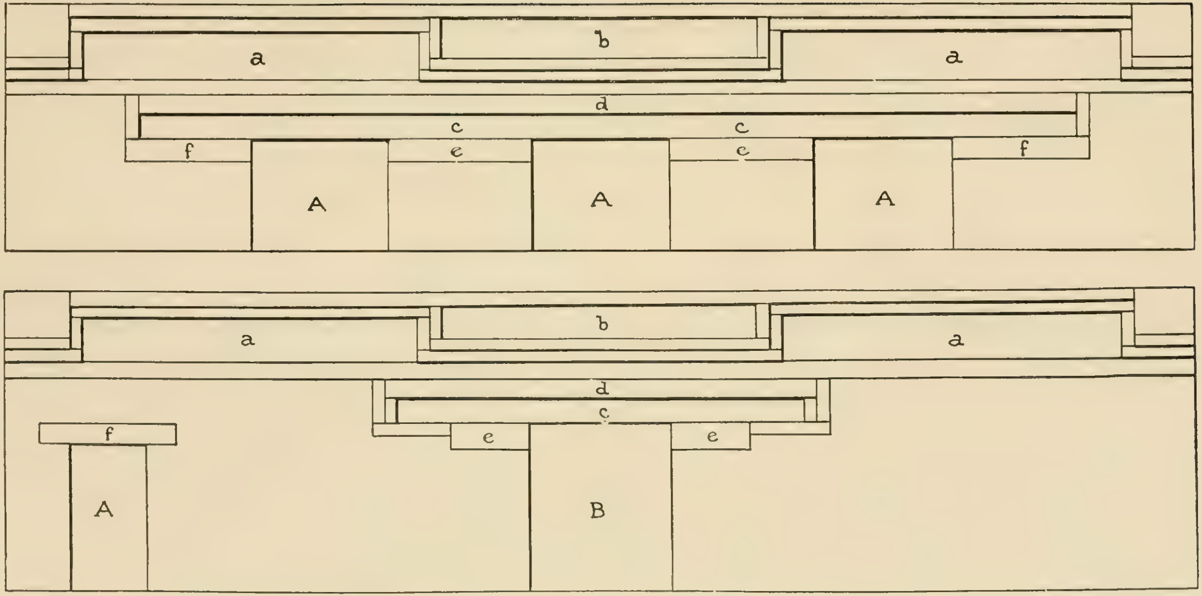
[a] Peñafiel, Monumentos del Arte Mexicano Antiguo, Berlin, 1890, atlas II, lámina 212–227.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B

SKETCH OF THE FAÇADES ON THE NORTH AND SOUTH SIDES OF THE ADJOINING COURT, PALACE I, MITLA

In the second palace, the largest and best preserved, there is now absolutely nothing to be seen of these paintings. Nevertheless, beyond a doubt there were some here also, for the stucco coating, on which the paintings were executed in the other palaces, can be recognized here also in the narrow recessed panels over the doors. In the court adjoining the fourth palace, which is situated nearest to the river, the two side walls and the lower part of the third are still preserved. On the east side there may still be recognized in the narrow recessed panels the upper edge of the painting with the beautiful border, reproduced (fragment 1) on the first plate. The four fragments of painting which are reproduced under numbers 2 to 5 on this plate belong to the north side of this court. All the rest of the painting which is preserved belongs to the court adjoining the palace, which has the most elevated position, namely palace I. This palace has been turned into a priest's dwelling since the country was won over to Christianity, and in the midst of its buildings rises the church of San Pablo de Mitla. The adjoining court is used, according to a long-established custom, as a stable. The animals wander freely about the court, and against one of the sides a manger of masonry has been built under a protecting board roof. Both structures are very desirable for the welfare of the animals, but they have been fatal to the paintings, for the posts which support the penthouse have been driven into the wall. A part of the painting has also been entirely walled in for the construction of the manger. Finally, as I have already mentioned, a pigsty has very recently been built against the north side of the court. That could likewise not be done without serious injury to the painting. On the other hand, we must be just and recognize that perhaps the very reason why the paintings have been still so largely preserved in this portion of these historic remains is because this court, as a part of the parsonage, has been withdrawn from general observation and use; that is, from general exploitation and demolition.

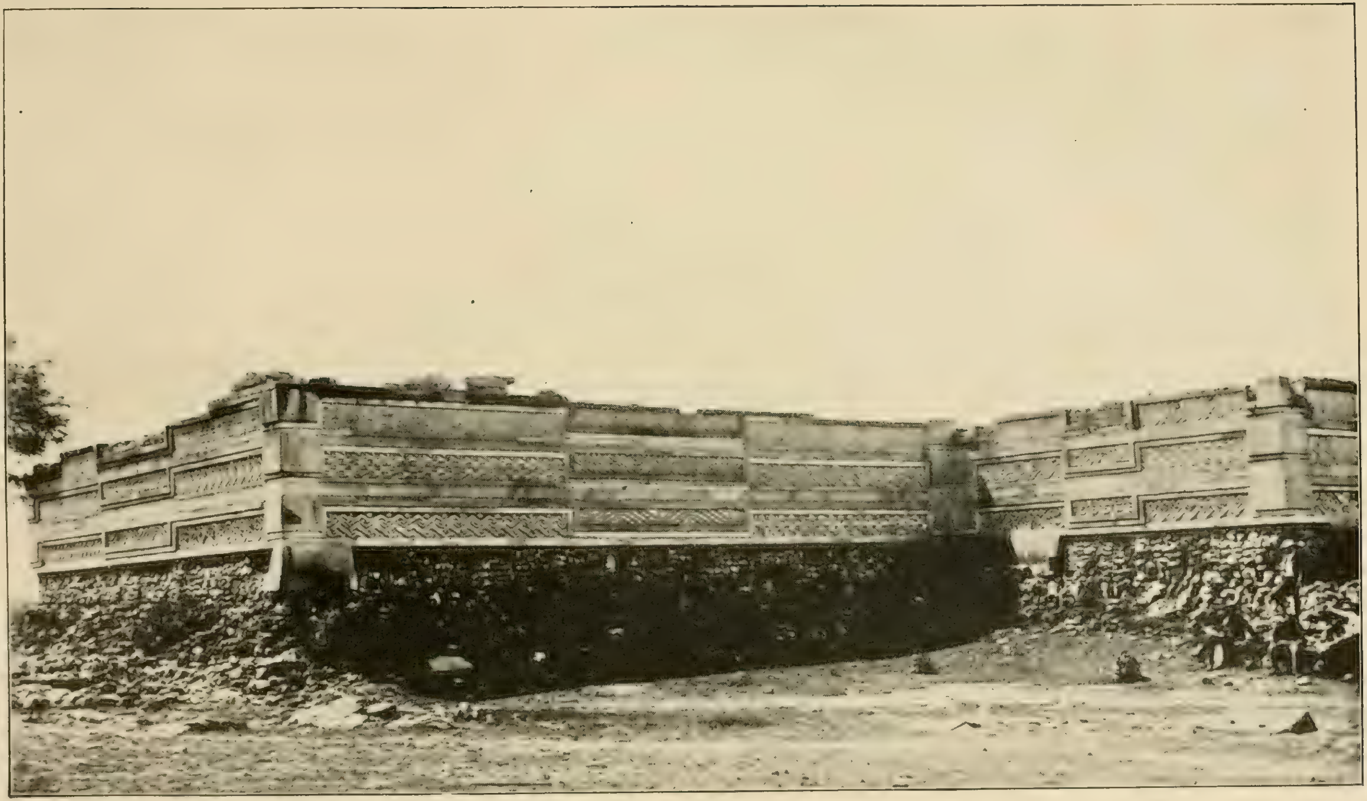
Before I turn to the description and explanation of these pictures, it seems to me to be appropriate to put together from existing sources what is known concerning the nature and character of the religious conceptions of the Zapotecs.

THE ANCIENT ZAPOTEC COUNTRY

Only very scant information has come down to us concerning the ancient Zapotec country. The Mexicans were evidently very little in touch with its inhabitants. Not even the name of the Zapotecs is mentioned in any one of the lists of nations which were compiled by the historians of ancient Mexico. There were always other tribes between them and the Mexicans, and these bounded the ethnic horizon, at least from the current Mexican point of view; nor did the otherwise well-informed Mexican who gave Father Sahagun an account " of all the tribes which came into this country to settle here " mention the Zapotecs. He gives a detailed account of the tribes adjacent to the Mexicans, and gives very interesting information concerning some of the northern nations, but of the southern he mentions expressly only the Couixca, Tlapaneca, and Yopi. All the rest appear to be classed under the head of nations " living at the rising of the sun ", whom he designates as Olmeca Uixtotin Mixteca, and also as Olmeca Uixtotin Nonoualca, or simply as Anahuaca, " maritime people ".

The great trading expeditions first brought the Mexicans in touch with the Zapotec tribes, and these expeditions were directed first and foremost to the Atlantic tierra caliente. Tuxtepec, on the Rio Papaloapan, was the first large trading post. The next points to be reached were Tabasco and Xicalango. The latter was the great center where the merchants assembled from all parts of the Central American world and from which led the commercial highways to Chiapas, Soconusco, and Guatemala, up the Usumacinta, and across the country to the Golfo Dulce and to Honduras, finally northward by way of Champoton and Campeche to the more thickly populated portions of the peninsula of Yucatan. The Mexican merchants seem already to have found the road to Xicalango in early times and to have made use of it. Perhaps they even pressed on farther from that point at an early period. The various swarms of Mexican population which we find diffused far toward the south, almost to the Isthmus, appear to have taken this route. It was not until a comparatively late date, however—and for this there exists positive proof—that the Mexicans succeeded in pushing forward to the Pacific tierra caliente, the fertile plains of Tehuantepec, the region of Zapotec expansion, and then only after the partial subjugation of the Zapotec tribes by the united strength of the states of the Mexican table-land.

At an early period, when Mexican commerce was directed mainly to the Atlantic tierra caliente, a permanent Mexican settlement was



ONE VIEW OF PALACE II, MITLA

already made in the Zapotec region. Tradition relates that in the wild forests of Mictlanquauhtla some inhabitants of the city of Uaxyacac murderously attacked and plundered a Mexican caravan which was returning home from Tabasco with costly goods, the news of which did not reach the Mexicans until years later. The king who was then reigning, Motecuhzoma the elder, surnamed Ilhuicamina, equipped an expedition to avenge the deed, and the crime was atoned by the extermination of the entire tribe. A number of Mexican families and about 600 families from neighboring cities situated in the valley of Mexico started out to settle the vacant lands of the exterminated tribe, under the leadership of four Mexican chieftains whom the king had chosen for this expedition. They proceeded but slowly, and at every halting place a few remained behind. When Uaxyacac was finally reached, the lands were divided among the colonists, to the great satisfaction of the tribes living in the vicinity, according to a remarkable statement in the chronicle. The people of Quauhtochpan, Tuxtepec, and Teotitlan, who " were on the coasts of Uaxyacac ", that is, bordered on Uaxyacac, were especially pleased.[a]

Assault and assassination of Mexican merchants are almost always mentioned as the casus belli in the native records. It seems very probable that in this case these really were the actual cause of war. It is at any rate obvious from the above story that the permanent settlement of Mexicans in Uaxyacac was a consequence of the commercial intercourse which the Mexicans maintained with Tabasco, and that it was made in order to insure the safety of this intercourse. On the road to Tabasco lay also the three cities which are named in the report above quoted as those which were especially pleased at this new settlement.

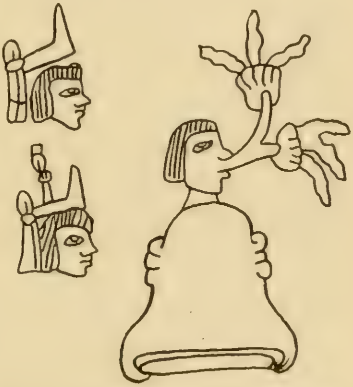


FIG. 54. Symbols from the Mendoza codex.

Up to the time of the Spaniards, the Mexicans were thus settled in the immediate neighborhood of the Zapotec royal city, in the original and hereditary seat of the Zapotec nation. This colony was always looked upon by the Mexican kings as an important place. It was under the special control of two high Mexican officials bearing the titles Tlacatectli and Tlacochtectli (see figure 54, from the Mendoza codex, page 16), and doubtless had the character of a military colony. In the new order of affairs arising out of the Spanish conquest, the inhabitants of this Mexican village were allotted to the newly founded

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[a] Tezozomoc, Crónica Mexicana, chap. 39.

Spanish city Segura de la Frontera, or Antequera, as it was later called. So it chanced that the old native name of this Mexican village, which means "at the hill of algarobas",[a] was transferred, with a somewhat changed pronunciation, as Oaxaca or Oajaca, to the Spanish city, and now not only this city is called by that name, but the whole state whose territory is governed from this city.

The existence of a Mexican colony in the midst of Zapotec territory naturally implied a certain restraint, the recognition, in fact, of the superior power of the Mexicans. Therefore it does not seem remarkable that in the tribute list of the Mexican kings various neighboring Zapotec cities were named, besides Uaxyacac, which had to pay tribute to the capital, Mexico. The tribute consisted chiefly of fine textiles, besides which a certain quantity of cereals, 20 gold disks, and 20 small sacks of cochineal had to be furnished.[b] This fact, however, must by no means be interpreted to mean that the Mexicans exercised authority over the entire Zapotec country. It can not even be said that the cities which are named in the list were subject directly to Mexican rule. For there are among them those which we know certainly to have been under the sovereignty of the Zapotec kings, as Etla, which was called by the Zapotecs Loo-uanna, "place of provisions", the city of Teticpac, already mentioned above, and the Zapotec frontier station Quauhxilotitlan, now San Pablo Huitzo.[c] This relation is probably best explained by assuming that the Zapotec cities named on page 46 of the Mendoza codex agreed to the payment of certain contributions to the Mexicans in order to remain unmolested by them.

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[a] The hieroglyph of the city given above in fig. 54 shows the conventional drawing of a mountain (tepetl), which is frequently simply an expression of the fact that the composite sign represents a hieroglyphic picture of a place name. On the mountain is seen an algaroba tree (uaxin), recognized by the great fruit pods (edible) with wavy edges, growing out of the nose (yacatl) of a human face. The "nose" signifies also in an extended meaning, "point", "projection", "front". The Tlacatectli is designated in fig. 54 by the royal headband of the Mexicans in turquoise mosaic; the Tlacochtectli, by a similar headband with the shaft of an arrow in it.

The name Uaxyacac is plainly Mexican. The city is called by the Zapotecs, Mixtecs, Cuicatecs, Chinantecs, and Mixes, by other names, namely Luhu-laa, Nuhu-ndua, Nahanduva, Ni-cuhui, Uac-uim, but all of these have about the same meaning, namely, "at the point of algarobas" or "at the place of algarobas". Naturally, it can no longer be settled whether these names are translations of the Mexican name or whether the latter, on the other hand, was a translation of an original Zapotec name.

[b] Mendoza codex, pl. XLVI.

[c] The names of this place have undergone several changes in meaning. The Mexican name Quauhxilotitlan means "among the quauhxilotes", or "among trees whose (edible) fruit has the form of a young ear of maize". This name appears already at an early period to have been changed into Guaxolotitlan by defective and faulty pronunciation. Burgoa uses it in this form. According to that, Gracida explains the name as "place of the guajolotes", that is, of the turkeys, in his otherwise very useful little book, Catálogo Etimológico de los Nombres, etc., de Oaxaca. The place was called by the Zapotecs Uiya-zoo, "espier of the enemy", because it served as an outpost on the frontier and commanded the great cañada, the principal road communicating with the Mexican highlands. This old Zapotec name can be plainly recognized by the manner in which I myself heard it pronounced on the spot, namely, Uizo. The official spelling of the name, Huitzo, refers it back incorrectly to a Mexican root, uitz-tli, "thorn".

The settlement of the Mexicans in Uaxyacac is said to have occurred under the rule of the elder Moteculzoma; that is, in the period between about 1440 and 1470 A. D. That would be about a hundred years after the period in which, as Father Burgoa says, the Zapotecs spread toward the south and began to conquer the fruitful coast strips of Jalapa and Tehuantepec.[a] The account which Father Burgoa gives of this conquest, derived from the narratives of the Zapotecs, is far from clear and its details are scarcely credible. The conquest is said to have been made with the assistance of Mixtec allies. The Zapotecs, it is said, met Mexican hosts there side by side with the Huave, a tribe which had emigrated from the south and which at that time inhabited the entire coast strip of that region, the fertile and productive territory of Tehuantepec being habitually used by the Mexicans as a resting place and rendezvous for the expeditions sent out to conquer Guatemala. The Zapotec king is said to have then held the Mexican forces in check in a mountain fastness by the river of Tehuantepec—only the Quiengola can be meant from the description—and to have done them so much harm that the Mexican king (Burgoa still speaks only of Moteculzoma) was obliged to consent to a cessation of hostilities and an arrangement.[b]

This account, as has been said, is not at all authentic. It confuses earlier events with later ones and recognizes, naturally, only the glorious deeds of the Zapotecs. The settlement of the Pacific coast strip must indeed have occurred a long time before the Mexicans entered this territory; for, as the most reliable sources unite in stating, it was not until the time of Auitzotl, that is, at the very end of the fifteenth century, that the Mexicans extended their expeditions into this Pacific coast district, the Anauac Ayotlan, the "coast land of Ayotlan", as the Mexicans called it. The advance post of the Mexicans in Uaxyacac probably afforded the rallying point for these Mexican enterprises. The motive for these expeditions was also without doubt commercial advancement. The merchants boasted of having alone set on foot and carried through these expeditions.[c]

The operations began, it seems, with attacks upon the cities of the Zapotec country proper, the Valle de Oaxaca. According to the interpreter of the Codex Telleriano-Remensis, the Mexicans subjugated "the city of Mictla in the province of Huaxaca" in the year 2 Tochtli, or A. D. 1494, and "the city of Teotzapotlan, which was the capital of the province of Huaxaca", in the year 3 Acatl, or A. D. 1495. This information is interesting because mention is made here of the conquest or destruction of the Zapotec city of priests and tombs, Yoopaa, or Mictlan, by the Mexicans in pre-Spanish times. The picture writing itself[a] does not entirely agree with this interpretation. In it only the conquest of Uaxyacac and Teotzapotlan—which may refer, of course, to the entire province, that is, to the whole valley—is expressed by the hieroglyphs of these two names and a prisoner of war adorned for the sacrificio gladiatorio (figure 55).

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[a] Burgoa, work cited, chap. 71: Y de suerte se apoderaron les Zapotecos de más de 300 años à esta parte en su gentilidad, que llenaron todos los sitios acomodados de poblaciones ("So that more than 300 years ago the Zapotecs conquered this country in their paganism, and filled all the convenient sites with towns"). Since Father Burgoa wrote about the middle of the seventeenth century, we may consider the middle of the fourteenth century as the date of this conquest.

[b] Burgoa, work cited, chap. 72.

[c] See Sahagun, v. 9, chap. 2.

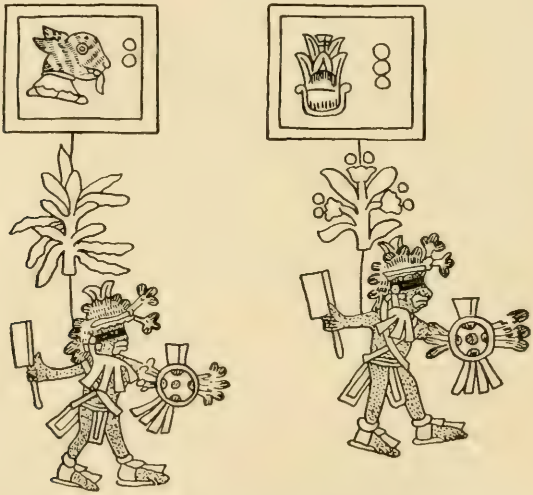

FIG. 55. Symbols from the Codex Telleriano-Remensis.

In the coast land the expeditions doubtless extended through several years, for the subjugation of the cities of the coast land is not reported until the year 5 Calli, or A. D. 1497, and in this report Chimalpahin, Codex Vaticanus A, and Historia Mexicana of the Aubin-Goupil collection agree: Chimalpahin[b] mentions Xochitlan, Amaxtlan, and Tehuantepec as the cities which were conquered in this year by the Mexicans. Codex Vaticanus A[c] and Historia

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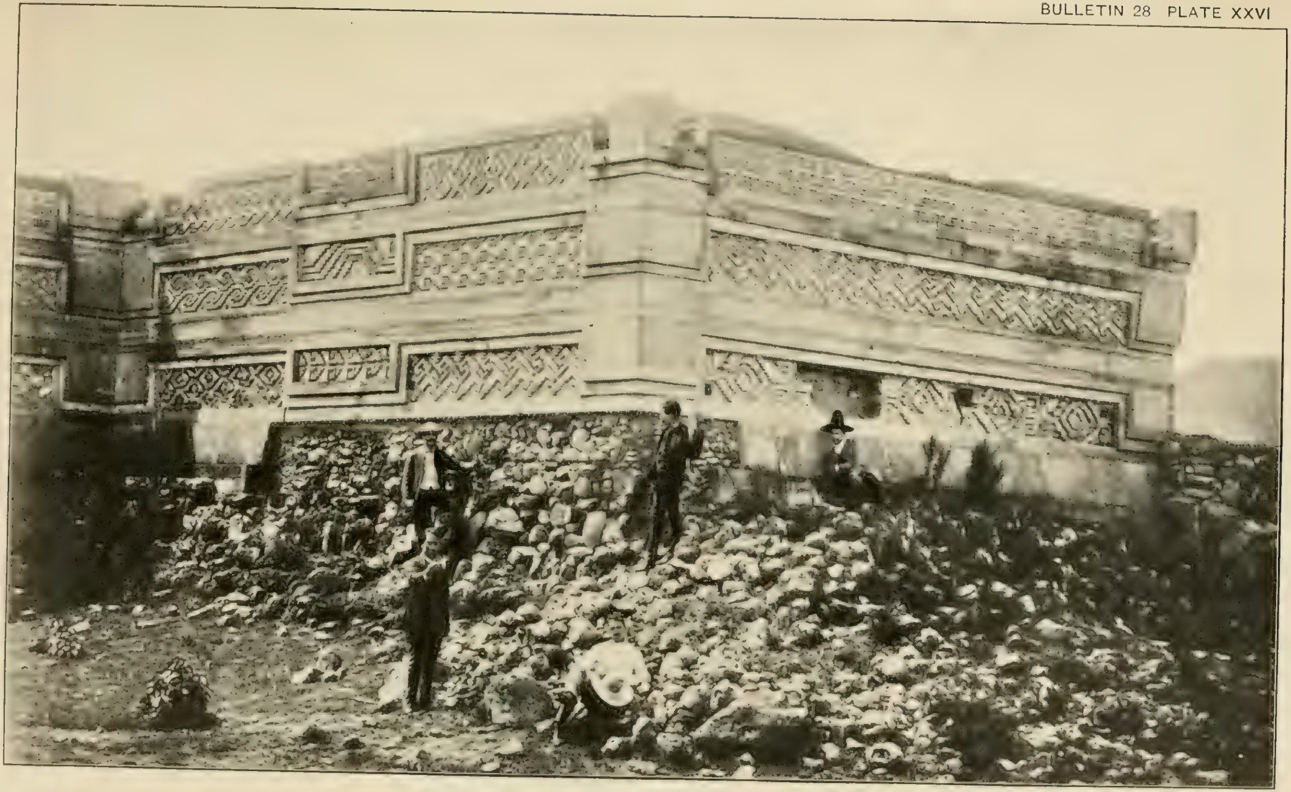
[a] Part 4, pl. 22. The name Uaxyacac is expressed here simply by the picture of the algaroba tree; the name Teotzapotlan, by the picture of the sapodilla tree.

[b] Añales de Domingo Francisco de San Anton Muñon Chimalpahin Quauhtlehuanitzin. Ed. Rémi Siméon, Paris, 1889, pp. 10 and 167.

[c] Codex Vaticanus A, page 127. Amaxtlan is expressed by the combination of a breechcloth (maxtlatl) and the sign for water (atl), which are to be seen on the conventional painting of the mountain. Xochitlan is expressed by a flower (Xochitl) and an undetermined element, which is perhaps intended to represent a row of teeth (tlantli). The battle is represented in the former city, the victory in the latter.



A SECOND VIEW OF PALACE II, MITLA

Mexicana of the Aubin collection[a] mention only Xochitlan and Amaxtlan (figures 56 and 57). According to the accounts of the Mexican merchants, which are preserved for us in the work of Father Sahagun,[b] this expedition to Tehuantepec was an independent enterprise of the great merchants of Mexico, Tlatelolco, and the other allied cities. They were besieged four years, the story goes, in Quauhtenanco (" forest stronghold ", " blockhouse? ") by the united contingents of the cities of Anahuaca—Tehuantepec, Izuatlan, Xochtlan, Amaxtlan, Quatzontlan, Atlan, Omitlan, and Mapachtepec.

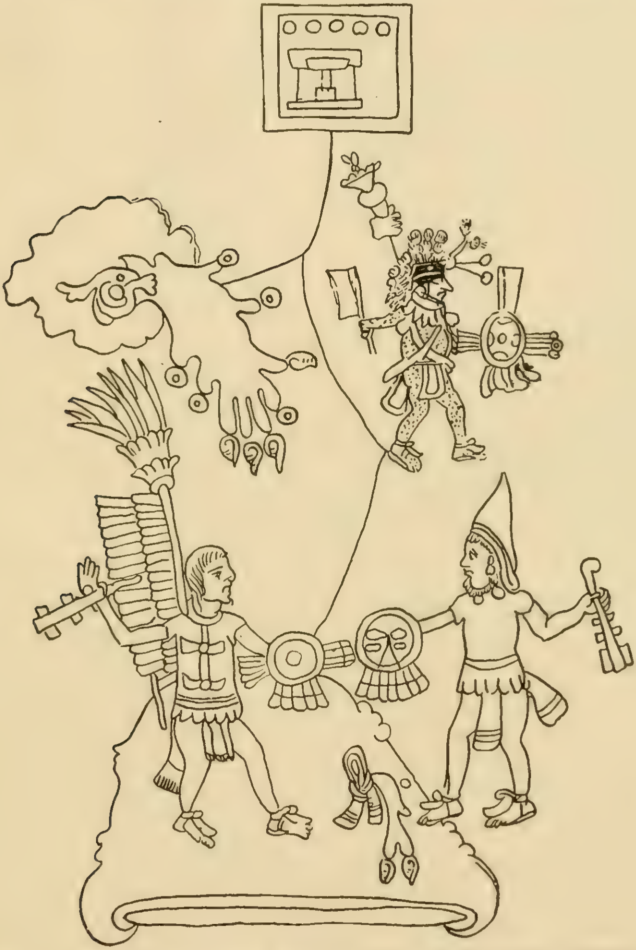


FIG. 56. Battle scene from Mexican painting, Aubin-Goupil collection.

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[a] Histoire de la Nation Mexicaine depuis le départ d'Aztlan. Manuscripts Figuratifs des Anciens Mexicains. Copie du codex de 1576. Collection de M. E. Eugène Goupil (ancienne collection, Aubin). Nos. 35, 36 du Catalogue. Paris, 1893, p. 76.

[b] Sahagun, v. 9, chap. 2.

The struggle is said to have ended at last in a decided victory for the merchants and the taking of numerous captives by them. In like manner the chronicle of Tezozomoc[a] relates the complete conquest and subjugation of this territory. Xochitlan, Amaxtlan, Izuatlan, Miauatlan, Tehuantepec, and Xolotlan are named by Tezozomoc as the cities against which this warfare was directed.

There is probably no doubt that these enterprises were so far successful that the Zapotecs were forced from this time forward to allow the Mexican merchants to pass through to the regions on the Pacific coast and to grant them freedom of trade in their own territory. It must indeed have been a successful war for the Mexicans, according to all the records, for it filled their slave markets and furnished the altars of the gods with sacrifices. These expeditions, however, did not result in a conquest and the lasting subjugation of the Zapotec country. The Zapotec kings remained as independent afterward as they had been before and as well prepared to meet the invading Mexican hosts by force of arms. Indeed, the Mexican kings, owing to clearly understood commercial interests, evidently felt the need of entering into a treaty with the Zapotecs. This is proved by the bestowal of a Mexican princess in marriage upon the Zapotec king, Cocijo-eza, a fact which is told alike by Father Burgoa,[b] who drew his information from Zapotec sources, and by the interpreter of the Codex Telleriano-Remensis.[c] This alliance did not, of course, put a stop to intrigues on the part of the Mexicans. Indeed, this Mexican princess, who was called "cotton flake" (Zapotec Pelaxilla: probably, Mexican Ichcatlaxoch), gained especial fame and honor among the Zapotecs because she did not comply with the demands made upon her by her father, but betrayed the plans of the Mexicans to her husband, the Zapotec king. The son of Cocijo-eza and of this Mexican princess was Cocijo-pij, the last king of Tehuantepec.

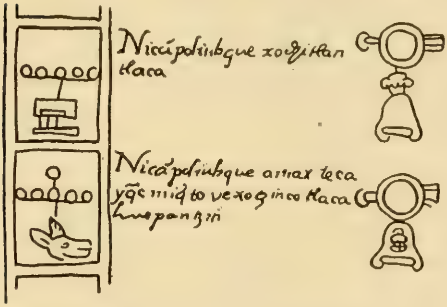
Nicā polihuque xochitlan tlaca
Nicā polihuque amax teca yq̄c miqto vexoqinco tlaca huepanzin

FIG. 57. Mexican symbols of years and pueblos.

When Cortes landed on the coast of Mexico and overthrew the supremacy of the Mexicans by his skillful management and military power he was joyfully hailed by the Zapotecs, as well as by the Totonacs and the Tlascaltecs, as their deliverer from the power of

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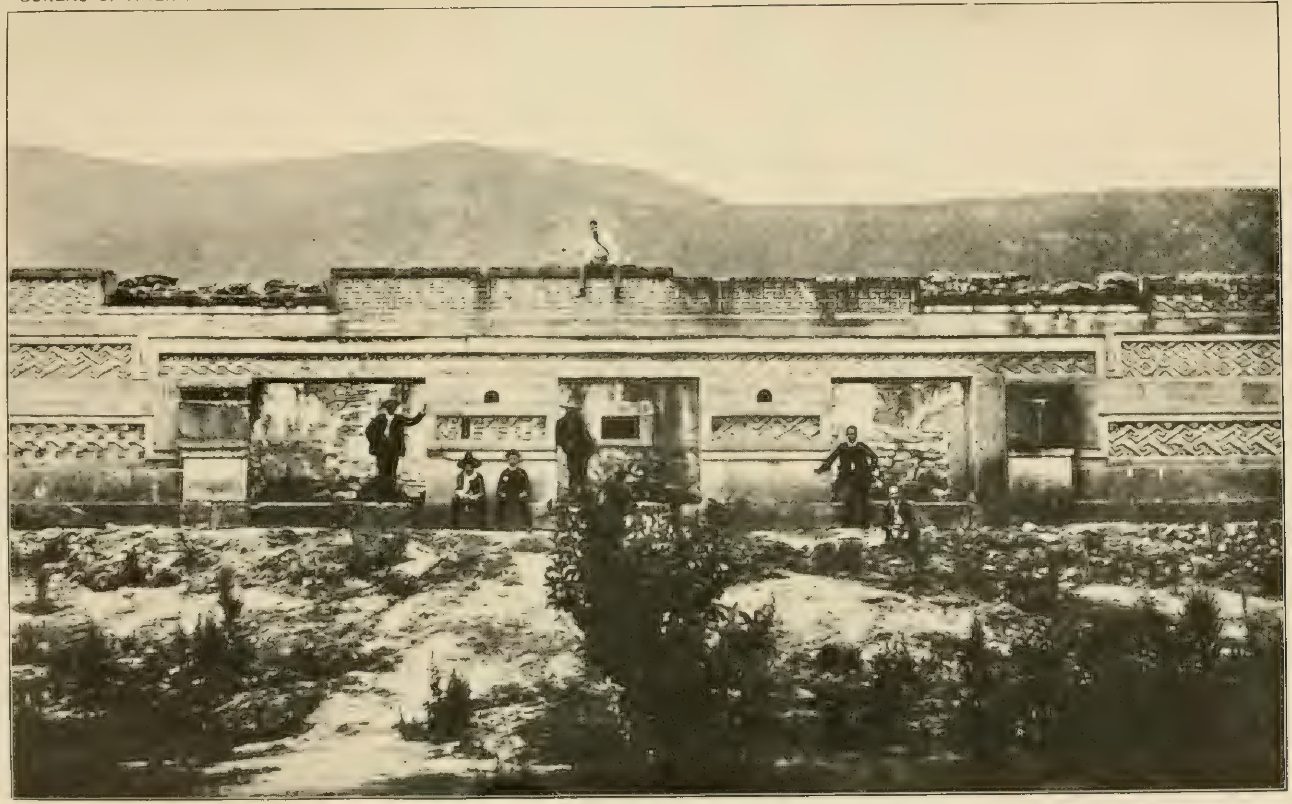
[a] Crónica Mexicana, chap. 75, 76.

[b] Burgoa, work cited, chap. 72.

[c] Part 4, pl. 23, in connection with the year Tochtli, or A. D. 1502.



FRONT OF PALACE II, MITLA

the Mexicans. The Tlascaltecs first measured their strength with Cortes before they allied themselves with him, but from that time on they cleared the way for him and fought his battles as devoted and faithful allies. The Zapotecs submitted unconditionally from the beginning to the Spanish conqueror, turned to him when the Mixtec prince of Tototepec threatened an attack, and received Cortes with great splendor when he came down as far as Tehuantepec in later years. The Zapotecs, nevertheless, very soon became aware of the poor exchange they had made. It was in the territory of the Zapotecs that Cortes selected the best lands, the Valle de Oaxaca and the fruitful, well-watered vegas of Jalapa, in order to form from them his earldom, his family estate. However, "Cortes granted a moderate allowance in money (le hizo donacion de alguna ayuda de costa)" to the king of Tehuantepec "with which to support the small family which still remained to him";[a] and while the king, who was baptized with the name Don Juan Cortes, built monasteries for the monks with great liberality and furnished them with lands, gardens, fish ponds, etc., the monks seized and imprisoned him because he fell away from the true faith and performed diabolical ceremonies. After long and wearisome processes he was sentenced by the highest court in Mexico to lose his dignities and all his remaining possessions. He died, while returning from Mexico, in Nexapa, just as he had once more set foot on the soil of his former kingdom.

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[a] Burgoa, work cited, chap. 72.

UNITY OF MEXICAN AND CENTRAL AMERICAN CIVILIZATION

The Zapotecs and their kindred were a nation unrelated to the Mexicans. If they can be classed with any of the great language groups belonging to the region of the ancient Mexican-Central American civilization, it can only be the Maya group. Indeed, a number of roots and many structural peculiarities of the language seem to indicate such a connection. The whole region of ancient Mexican-Central American civilization is, however, a conspicuous example of what Adolph Bastian calls a " geographical province ". For, independent of a linguistic difference, we find the special elements of Mexican civilization developed in an exactly similar way among all the peoples of this territory. This is true of the general conduct of life, the technical and military customs, the organization of state and of society, but more especially of religion and learning.

The unity of this entire region of ancient civilization is most clearly expressed by the calendar, which these people considered the basis and the alpha and omega of all high and occult knowledge. This calendar is a special product of Central American culture. Its essential peculiarities are the adoption of the fundamental number 20 as the leading unit, and the combination of this leading unit with the number 13. These are features which appear in no other calendric system hitherto known.[a] Within the region of Central American civilization not only are these two essential peculiarities to be met with in the calendars of all the civilized nations, but also a close correspondence in the names of the individual days of a leading unit. This I have demonstrated in regard to the Maya territory in my work entitled " Uber den Charakter der aztekischen und der Maya-Handschriften ",[b] and regarding the Zapotec territory in a work on Mexican chronology which appeared in 1891.[c] The Zapotec calendar is distinguished from those used by the other nations by certain peculiarities which one is tempted to consider evidences of special antiquity, but which are, perhaps, only the result of a particular development and an especial use for augural purposes.

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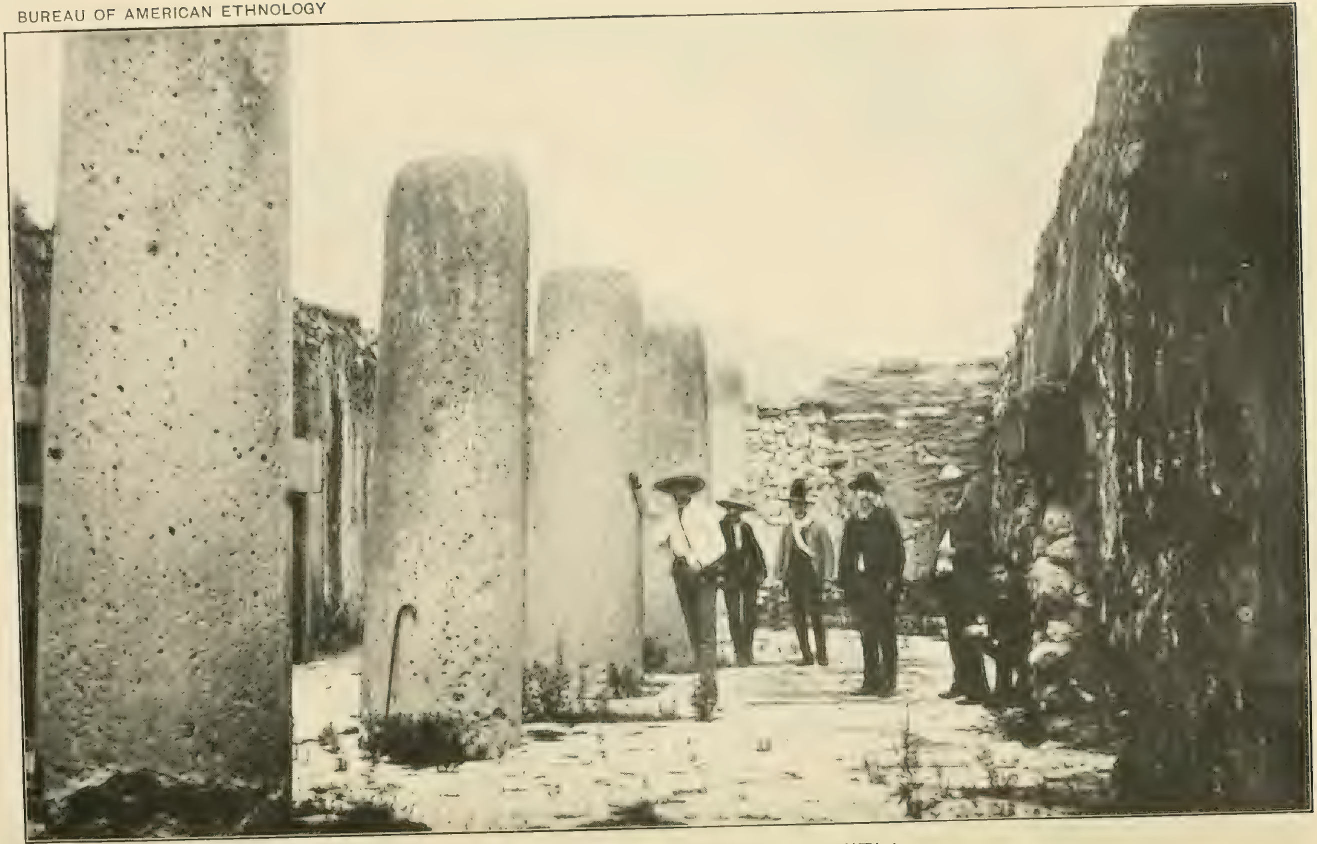
[a] Cyrus Thomas attempted to show relation of the Central American calendar to that used in Hawaii. This attempt, however, must be pronounced an utter failure. The ancient inhabitants of Hawaii had a kind of actual month of 30 days; and the only agreement with the Mexican calendar could be the fact that 12 × 30, like 18 × 20, gives the number 360, thus leaving a surplus of 5 days in the year.

[b] Zeitschrift für Ethnologie, v. 20, 1888, p. 1 and following.

[c] Zeitschrift für Ethnologie, v. 23, 1891, p. 89 and following.



HALL OF COLUMNS, PALACE II, MITLA

Like all other things and every event of the world, the calendar was governed by relations to space by the powers ruling in the four points of the compass. This was true of the simple calendar, the so-called tonalamatl, of 13×20, or 260, days, and of the greater periods of time, the 4×13, or 52, solar years, which, as I have demonstrated in another place,[a] were developed necessarily and logically from that simple calendar. These greater periods of time, that is to say, the single components of the same, the successive, years each bearing the name of one of four signs, stood in a specially close relation to the points of the compass. The reference of the years to the cardinal points, therefore, was quite common to both the Mexicans and the Mayas. The Zapotecs referred also the simple tonalamatl to the four points of the compass, and therefore divided it into four sections of 65 days each. According to the conception of the Zapotecs, each of these periods was governed by the sign which gave the name to its first day, that is, by the signs which were called in Zapotec quia Chilla, quia Lana, quia Goloo, and quia Guiloo, and in Mexican ce Cipactli (" 1 alligator "), ce Miquiztli (" 1 death "), ce Ozomatli (" 1 monkey "), ce Cozcaquauhtli (" 1 king vulture "). The Zapotecs named these four powerful signs and the days Cocijo, or Pitao. " They offered to them their sacrifices and the blood which they drew from different parts of their bodies, the ears, the tip of the tongue, the thighs, and other members. The order which they observed in doing so was this: As long as the 65 days of the one sign lasted, they sacrificed to this sign, and at the expiration of these, to the next which came in turn, and so on until the first sign recurred; and they prayed to this sign for everything which they needed for the sustenance of life ".[b]

Pitao, or bitoo, means " the great one ", " the god ". Cocijo, on the other hand, corresponds to the Mexican Tlaloc, the god of rain, storms, and mountains. It is translated in the dictionary by " rain god " (dios de las lluvias) and " lightning " (rayo).[c] The rain god dwells in the four points of the compass, and varies according to these four points. Therefore the Mayas do not speak of the one rain god, Chac, but always of the four Chacs. The story runs also among the Mexicans that the rain god lived in four chambers, and that there was a great court in the middle where stood four great casks of water. The water in one of these was said to be very good, and the rain came from it at the right time, when the grain and the corn were growing. In the next the water was said to be bad, and the rain which came from it produced fungous growths in the corn, which turned black. It came from the third when it rained and froze; from the fourth, when it rained and no corn came up or when it came up and dried. This rain god, in order to produce rain, was said to have created many helpers in the form of dwarfs, who lived in the four chambers and carried sticks in their hands and jars into which they drew water from the great casks, and if the god commanded them to water some strip of land they took their jars and sticks and poured out water as they had been commanded; if there was a flash of lightning it was from something they had in the water or from the cracking of the jar.[a]

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[a] Zeitschrift für Ethnologie, v. 231, 1891, pp. 89–91.

[b] Juan de Córdova, Arte en Lengua Zapoteca, México, 1578, p. 202.

[c] See also Totia peni quij cocijo, " sacrificar hombre por la pluvia ó niño (to sacrifice a man for rain, or a child)"; tace cocijo, " caer rayo del cielo (to flash lightning from heaven) ". The name cocijo probably means the same as cozáana, that is, " the procreator ". See cociyo, huechaa, huichaana, cozaana, pichijgo, linage generalmente.

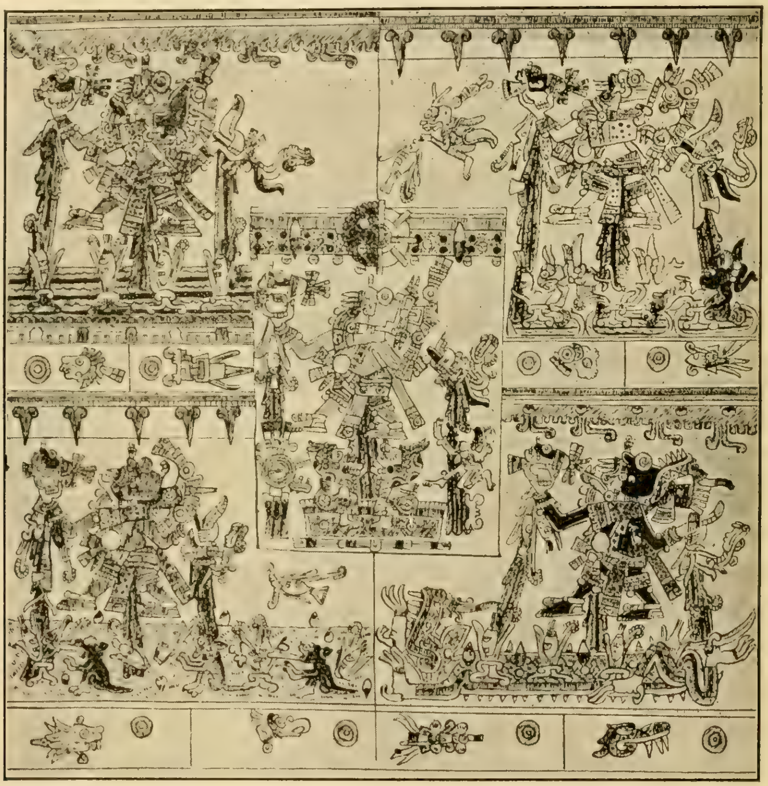

FIG. 58. The five rain gods, from the Borgian codex.

This reference of the four sections of the calendar to the rain god, who varied according to the four points of the compass, which is shown by the designation cocijo or pitao for the initial Zapotec signs of these four sections, is of special interest, inasmuch as it furnishes the explanation for some very remarkable pages of the picture manu-

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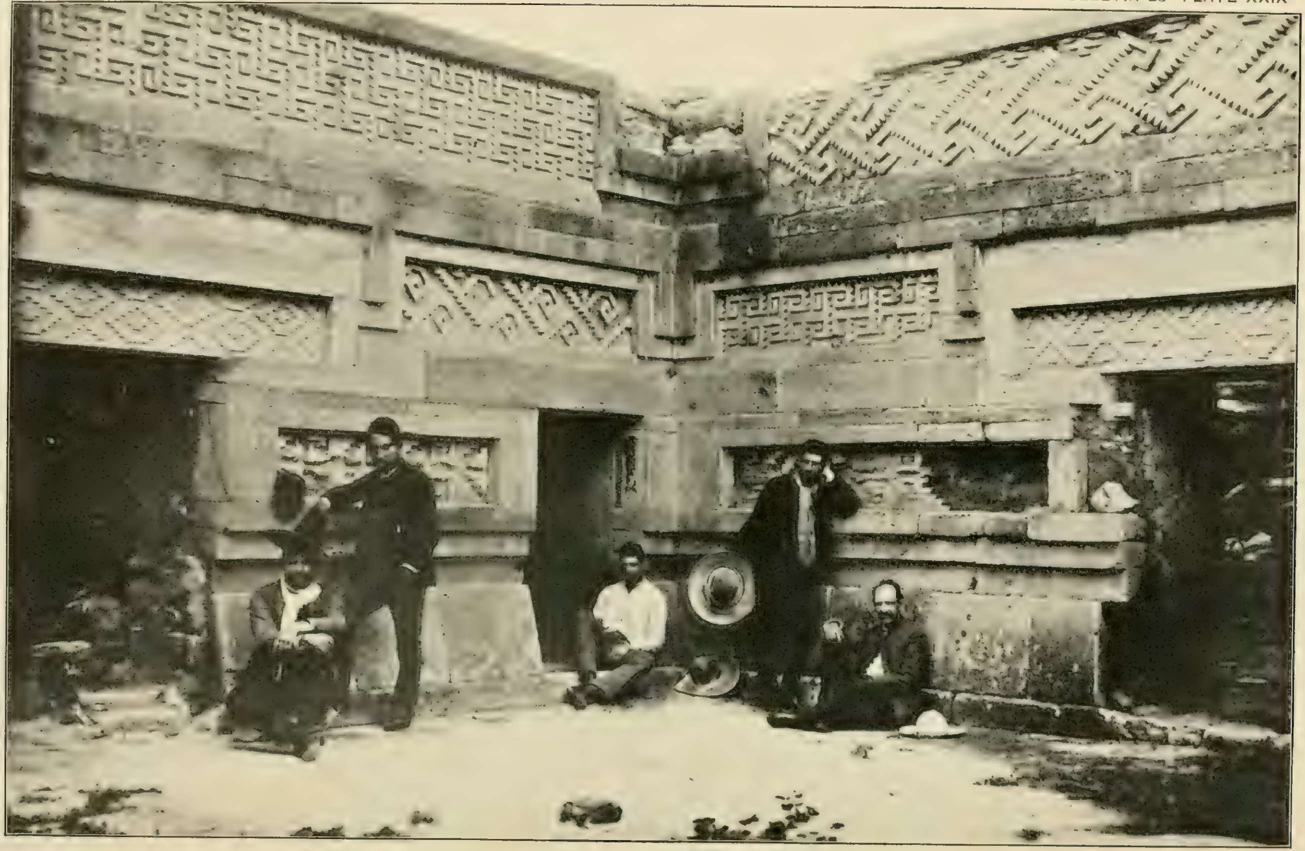
[a] Historia de los Mexicanos por sus Pinturas, chap. 2; Garcia y Icazbalceta, Nueva Coleccion de Documentos para la Historia de México, v. 3, México, 1891, p. 230.



INTERIOR COURT OF PALACE II, MITLA

scripts. In the Borgian codex, which is one of the best and most beautifully executed manuscripts of Mexican antiquity that we possess, there is found, on page 12, the complicated representation which I have reproduced here in figure 58. Placed in the order of a quincunx, we see five different pictures of the rain god, each holding in one hand a handled jug of the face-jug type (the face being that of the rain god) and in the other hand a snake which is bent in the form of a hatchet. The four figures at the corners are ascribed by the marginal numerals and signs to the initial days of the four divisions of the tonalamatl; ce Cipactli ("1 alligator"), ce Miquiztli ("1 death"), ce Ozomatli ("1 monkey"), ce Cozcaquauhtli ("1 king vulture"), and also to the initial years of the four divisions of the cycle of 52 years: ce Acatl ("1 reed"), ce Tecpatl ("1 flint"), ce Calli ("1 house"), ce Tochtli ("rabbit"). There are no day or year signs given with the fifth figure, the one in the center.

The first figure, the lower one on the right, represents the east. To it belongs the first division of the tonalamatl, designated by its initial day, "1 alligator", also the first division of the great cycle, designated by its initial year, "1 reed". This figure is painted a dark color and wears as a helmet mask the sign of the tonalamatl division to which it belongs, a cipactli (alligator) head. A cloudy sky, promising rain, is spread above the god, and under him lies extended the cipactli, as the Mexicans call it, the pichijlla in Zapotec, the alligator, the symbol of the fruitful earth, from all parts of whose body the ears and tassel of the maize plant are seen sprouting. The water which streams to the earth from the jug and from the hatchet-shaped lightning serpent of the gods brings down with it more maize ears and tassels. The rain god of the east is represented in every respect as a good and fruitful god.

The second figure, the upper one on the right, represents the north. The second division of the tonalamatl and the second division of the cycle, represented respectively by the first day, "1 death", and the first year, "1 flint", belong to it. This figure is painted yellow and wears as a helmet mask the sign of the second tonalamatl division, a death's-head. A clear, sunny sky, sending down rays of light, stretches above the god. There are three vessels below him, apparently filled with water. This water, however, is painted the brown color of stone instead of the blue of water, and in it are seen the bony nose and the eye of a death's-head. It is an obvious attempt to represent the water as dead, dried up. Winged insect shapes, wearing death's-heads, eat the ears of maize which stand in these dry water basins. In the water, however, which streams down from the jug which the god holds, as well as in that which comes from his hatchet-shaped lightning serpent, there descends a hatchet, the symbol of the god who strikes with lightning. This rain god of the north, therefore, designates drought, death, and famine.

The third figure, the upper one on the left, represents the west. The third division of the tonalamatl and the third division of the cycle belong to it, represented respectively by the initial day, "1 monkey", and the initial year, "1 house", belong to this one. The figure of the god is painted blue, and he wears as a helmet mask the sign of the third tonalamatl division, not a monkey's head, it is true, but the head of an animal which recalls somewhat Xolotl, and which is represented in the Borgian codex, page 16, near the day sign Ozomatli, "monkey", as the god of song and gaming. Above the god stretches a broad sky full of clouds and rain, and under him stand the maize plants, completely flooded with water.

The fourth figure, the lower one on the left, represents the south. The fourth division of the tonalamatl and the fourth division of the cycle belong to it, one represented by its first day, "1 king vulture", the other by its first year, "1 rabbit". The god is painted red and wears as a helmet mask the sign of the fourth tonalamatl division, a vulture's head. Above him is represented a clear, sunny sky, sending down rays of light. Under him, in the midst of a yellow, pulverized mass, are ears of maize in pairs, that is, abortions, and a kind of rabbit, with the face of a death's-head, feeds on them. In the water which streams from the jug in the god's hand there is seen, as in the figure of the north, a hatchet, but with the addition of a tongue of flame shooting out from the handle.

The fifth figure represents the center, or the direction from above downward. No day signs accompany it, for it belongs to no division of the calendar. The god is striped in white and red, which are the colors of the gods of the night heaven and the twilight, and he wears on his head the usual ornament of the rain god. The starry sky and the sign of day and night are represented above him. Below him sit the earth goddesses. The sign of war—shield, bundle of javelins, spear thrower, and banner—is seen coming out of the water which streams down from the jug. In that which runs down from the hatchet-shaped lightning serpent are pictured a skeleton and a jawbone. A variant of this interesting page occurs on page 28 of Codex Vaticanus B.

It is not necessary to emphasize the fact that the way in which the four rain gods are here differentiated according to the points of the compass corresponds fairly well to the characterization which is given in the passage above quoted (page 18) from the Historia de los Mexicanos por sus pinturas. Only in the latter place the order is plainly not east, north, west, south, but east, west, north, south.

The Zapotecs, as Juan de Córdova states, divided the 65 days of each tonalamatl division into five sections of 13 days each, which corresponds to the system that is followed by the Mexicans and Mayas. Cocij, or tobi cocij, is said to have been the name of such a division of 13 days, "as we say, a month, a division of time".[a] Cocij means "the distributor". Its primitive meaning is in all probability the same as cocijo, and it, therefore, in all likelihood refers also to the god of rain and of the points of the compass. The word has a general meaning of "time",[b] and means specially "a period of 20 days"; and, indeed, in its narrowest sense "20 days in the past", "20 days ago", while "20 days in the future", "in 20 days", was designated by huecij, or cacij.

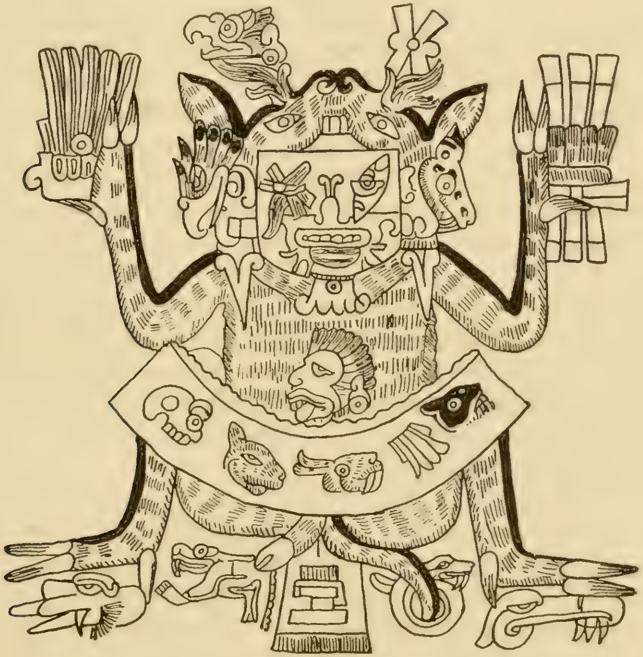


FIG. 59. The twenty day signs, from the Borgian codex.

The separate days of the cocij, according to Juan de Córdova, had each its special name, which was designated by the picture of an animal, as an eagle, a monkey, snake, lizard, deer, hare, or the like. Twenty such animal pictures are said to have been employed and their signs to have been assigned to and painted upon the different parts or members of a deer.[c] This observation is especially interesting because it also explains a picture on page 62 of the Borgian codex which I have reproduced in figure 59, and the first page of Codex Vaticanus B likewise corresponds to this representation. In figure 59 the deer is clearly to be recognized by the antlers (painted the customary blue), which are drawn on either side of the head over the ear, and by the deer's hoofs, while the figure of Codex Vaticanus B, although it agrees in every respect with figure 59, would without this comparison with the latter scarcely be recognized as a deer in its anthropomorphic and demonic form.

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[a] Juan de Córdova, Arte, p. 202.

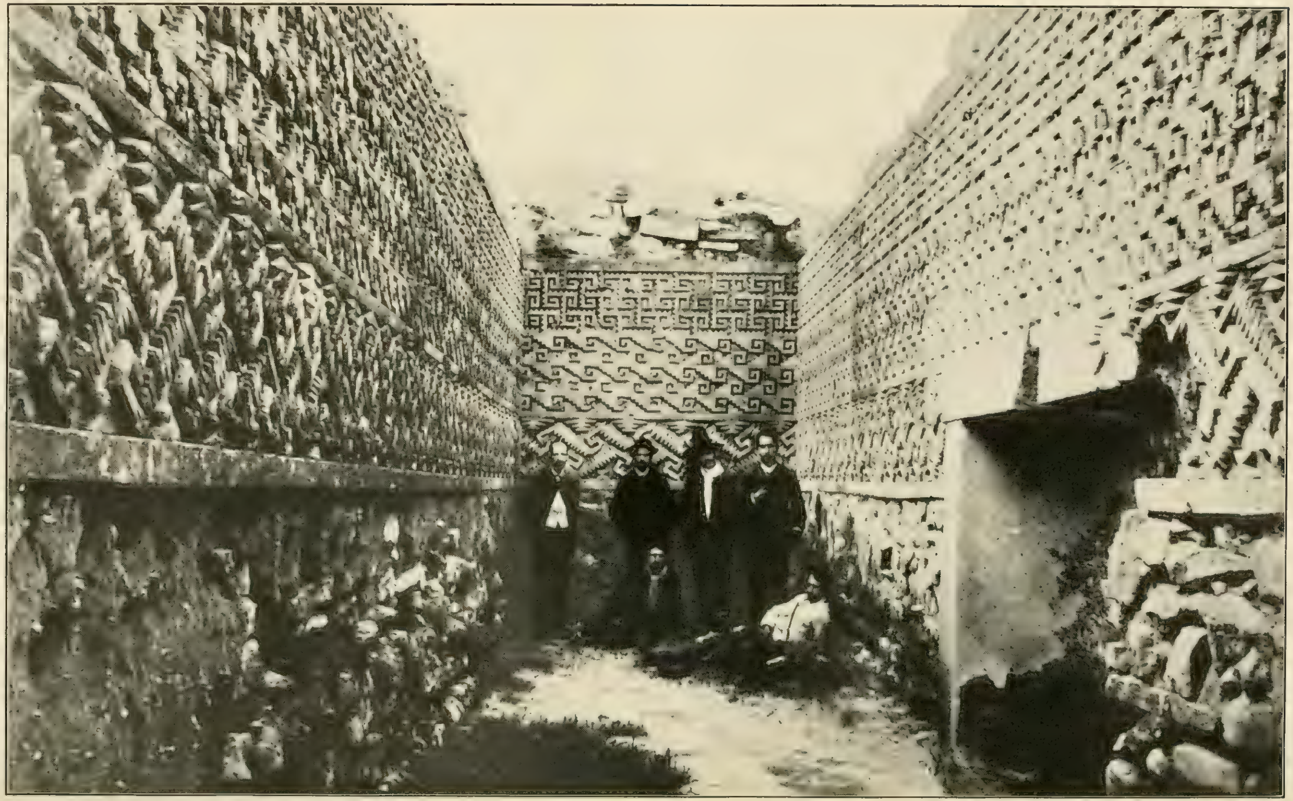
[b] As cocij cogàa: tiempo encogido en que no se puede trabajar ("fearful time in which one could not work"); cocij collapa, cocij layna, cocij: tiempo de mieses, frutas, ò de siego, ò de algo ("time of corn, fruit, or of harvesting, of wealth"); Coo yòocho, piyè yòocho, cocij yòocho: tiempo enfermo, ò de pestilencia: ("time of sickness, or of pestilence").

[c] Juan de Córdova, Arte, p. 203,

The distribution of the twenty day signs on the members of the deer is exactly the same in the two representations. Only, in the Borgian codex (figure 59) the order of the signs begins below on the right, but in the representation of Codex Vaticanus B it begins below on the left, so that these two figures are related as positive and negative. The first two day signs, alligator and wind god, that is, probably, earth and heaven, are placed on the two feet of the animal. The third, house, obviously belongs to the anus. The fourth, lizard, is ascribed to the penis; the fifth, snake, to the flexible tail. The day signs from the sixth to the tenth, death, deer, rabbit, water, dog, are placed on a broad band which lies across the belly of the deer. The eleventh, monkey, is on the breast. The twelfth and thirteenth, reed and twisted grass, are supported by the hands, or fore feet. The seven last, jaguar, eagle, vulture, rolling ball, flint, rain, and flower, are distributed over the face.

A distribution of the day signs essentially like this, but differing in some details, is portrayed in the Borgian codex, page 22, over the body of the god Tezcatlipoca; another, in the Laud codex, page 2, over that of the rain god, Tlaloc. A final outgrowth, evidently, of these representations, is on page 75 of Codex Vaticanus A, where the day signs are distributed over the different parts of the human body, but in an entirely different order.

Each of the twenty animals of the Zapotec calendar "had thirteen different names, and although all these thirteen names stood for the same thing, they were distinguished one from the other by adding letters or taking them away and by changing their numerals". With these words Father Juan de Córdova describes that which is doubtless the most remarkable characteristic of the Zapotec calendar, namely, that the twenty signs of the calendar were not merely, as among the other nations of Central America, combined with the numerals 1 to 13 in the way peculiar to this calendar, but that the combination of the signs with the numerals became incrusted, as it were, upon the form of the words serving as the day names, so that in every case there can be separated from the name of the word a prefix, which is about the same for all signs joined with the same numeral. Variations and exceptions certainly occur, and it is not



INTERIOR OF A ROOM OF PALACE II, MITLA

easy to tell whether they are not oversights or mistaken impressions of the worthy monk who preserved this calendar for us or perhaps are simply to be attributed to the careless reprint which is the only extant edition of the Grammar of Father Juan de Córdova. Combining the words with the numerals, the following result is obtained:

Chaga, or tobi (1), gives the prefix quia, quie.
Cato, or topa (2), gives the prefix pe, pi, pela.
Cayo, or chona (3), gives the prefix peo, peola.
Taa, or tapa (4), gives the prefix cala.
Caayo, or gaayo (5), gives the prefix pe, pela.
Xopa (6) gives the prefix qua, quala.
Caache (7) gives the prefix pilla.
Xona (8) gives the prefix ne, ni, nela.
Caa, or gaa (9), gives the prefix pe, pi, pela.
Chij (10), gives the prefix pilla.
Chijbi tobi (11) gives the prefix ne, ni, nela (these at least are the most frequent prefixes; but exceptions are more numerous here).
Chijibi topa (12) gives the prefix piña, piño, pinij.
Chijno (13) gives the prefix peci, pici, quici.

Of these different prefixes, however, only a few seem to contain a special meaning. I am inclined to connect the prefix quia, quie, which accompanies the sign joined with the numeral 1, with the word quia, quie, which means "stone" and "rain", taking into consideration that which has been said above concerning the part which the rain god plays in the calendar. The last prefix, which accompanies the signs united with the numeral 13, suggests pijci, "omen". Piño, pinij, has, perhaps, some connection with chiño, "full", "happiness", "blessing". The other prefixes seem to be variants merely of the well-known prefixes pe, pi, co, ua, by which persons in action and living beings are denoted. The syllable la is demonstrative.

If we separate these prefixes from the names of the 260 days of the Zapotec calendar, which Father Juan de Córdova has handed down to us, we have for the twenty day signs of the Zapotec calendar the following names:

Chijlla, alligator.
Quij, or Laa (wind), fire.
Quela, Ela, Laala, night.
Gueche, Guichi, Ache, Achi, Ichi, iguana.
Cee, Cij, sign of ill omen (snake).
Lana, veiled, dark (death).
China, deer.
Lapa, divided, cut in pieces (rabbit).
Niza, Queza, water.
Tela, dog.
Loo, Goloo, monkey.
Pija, Chija, that which is twisted.
Quij, Laa, reed.
Gueche, Eche, Ache, jaguar.
Naa, Quiñaa, mother (earth goddess, eagle).
Loo, Quilloo, narcotic root.
Xoo, earthquake.
Opa, Gopa, cold, stone.
Ape, Gape, cloud covering.
Lao, Loo, eye, face.

I have discussed these names in my work on Mexican Chronology,[a] already cited above, and have demonstrated their fundamental agreement with both the Mexican and the Maya nomenclatures of the twenty day signs. From this analysis I obtained the important fact that the double meanings which frequently occur in the Zapotec names of the day signs explain the apparently fundamental difference between the Mexican and the Maya names of the same sign. From this fact it is fairly safe to conclude that the Zapotecs or their kindred were the medium through which the knowledge of this calendar passed from the Mexicans to the Mayas, or vice versa, unless we ought to accept the theory that the Zapotecs or their kindred were those among whom this calendar was invented and by whom the knowledge of it was originally communicated to both the Mexicans and the Mayas.

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[a] Zeitschrift für Ethnologie, v. 23, 1891, pp. 115–133.

ZAPOTEC PRIESTHOOD AND CEREMONIALS

There is in all parts of the world a certain fundamental uniformity in religious ideas, still more in religious practices, in spite of a wide difference in the details. Professor Stoll has lately ingeniously set forth the cause of this uniformity in his book entitled "Suggestion und Hypnotismus in der Völkerpsychologie".[a] This uniformity is naturally more striking within the boundaries of one and the same larger or smaller area. Therefore it is not strange that we find the religious life among the Zapotecs, as far as our scanty means permit of elucidating the matter, proceeding on very much the same lines as that of the Mexicans or that of the Mayas, concerning whom we are much better informed on this point, especially in regard to the Mexicans.

Among the Zapotecs the organization of the priesthood seems to have had a somewhat peculiar development and was certainly more compact than among the other nations. They distinguished between high and subordinate priests and pupils, or children who were educated for the priesthood.

The high priests were called Uija-tao, "great seer". Their chief function was evidently to consult the gods in important matters concerning the whole nation or individuals and to transmit the answers to the believers. The way in which these priests obtained their inspiration is plainly described in the passage quoted above from the work of Father Burgoa. It is here clearly a question of autosuggestion. They had the power and the habit of putting themselves into an ecstatic state, and actually believed what they saw and heard in their visions and hallucinations. In Mexico the high priests were called Quetzalcoatl, in memory of the priest god of Tollan, who was said to have been the first who taught religious practices, especially the sacrifice of one's own blood, and they distinguished between a Quetzalcoatl Totec tlamacazqui and a Quetzalcoatl Tlaloc tlamacazpui, corresponding to the two chief deities whose worship was performed in the chief temple of the capital.[b] A similar idea seems to have existed in regard to the high priests of the Zapotecs.

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[a] Leipzig, 1894.

[b] Sahagun, v. 3, appendix, chap. 9.

These were not elected to their office, as was the case with the Mexicans, but they transmitted it, as Father Burgoa relates, to their sons or nearest relatives. From the description, however, which Father Burgoa gives of the way in which this transmission was made, it clearly appears that these high priests were considered as the living images of the priest god of the Toltecs, as the incarnation of Quetzalcoatl. While the priests were, as a general thing, bound to be chaste, and chastity was, as we shall see, assured by depriving boys destined for the priesthood of their virility, at certain festivals, at which the high priest was obliged to become intoxicated, maidens were brought to him, and if one of them became pregnant and gave birth to a boy he was destined to be the successor of the high priest. This agrees with the story related of Quetzalcoatl, the priest god of the Toltecs,[a] how he was enticed by wicked sorcerers, Tezcatlipoca and the god of the Amantecas, Coyotl inaual, to drink pulque; forgot his chastity in the intoxication, and indulged in intercourse with Quetzalpetlatl; and for this sin was forced to leave not only the city, but also the country, and go eastward to the seacoast, where he caused a funeral pyre to be erected for himself, and out of the fire his heart ascended to the heavens as the planet Venus.

The ordinary priests of the Zapotecs were called copa pitào (copa bitoo), "guardians of the gods", or ueza-eche, "sacrificers". Perhaps these two names indicate two special classes of priests, corresponding to the Mexican designations tlamacazqui and tlenamacac. The office of these subordinate priests is given in the description of Father Burgoa quoted above. They had, on the one hand, to keep the sanctuary, the idols, and everything which pertained to their worship in an orderly condition and in readiness and to assist the high priest in his duties. On the other hand, they were the ones who performed the actual sacrifices, especially the human sacrifices, after which they brought the heart and the blood to the high priest that he might offer it to the gods for food. In this respect the method appears to have been a different one with the Zapotecs from that used by the Mexicans, for what is reported of the Mexicans in regard to this seems to indicate merely that it was the chief, the high priest, who performed the actual sacrifice, though he was indeed relieved by others when the bloody work began to weary him, but yet was the first to put his hand to this butchery. If, however, the Zapotecs deviated in this from the Mexican, there appears to have been a remarkable agreement with the Maya custom; for Landa[b] reports of the Mayas of Yucatan that two different offices were designated

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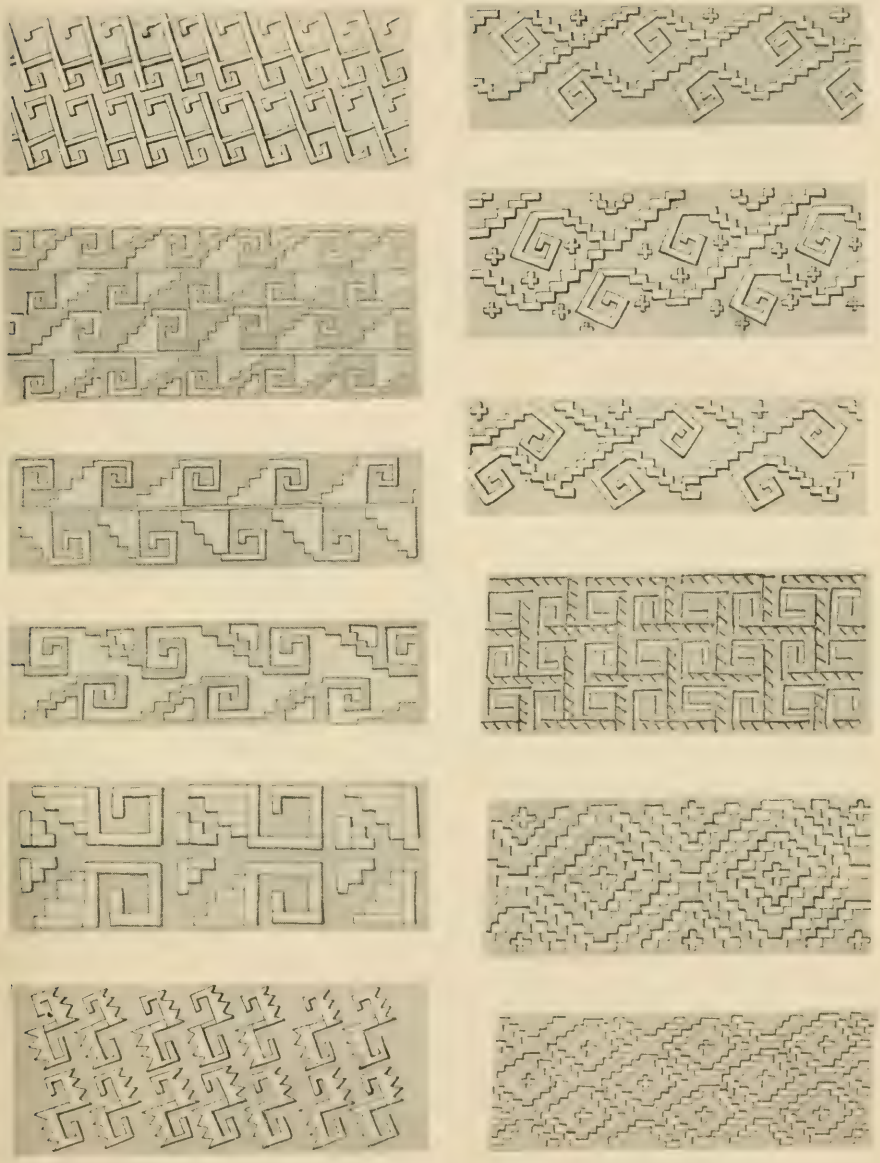
[a] Añales de Quauhtitlan Publicacion de los Añales del Museo Nacional de México, 1885, pp. 19–21.

[b] Relacion de las Cosas de Yucatan, edited by de la Rada y Delgado, p. 85.



RELIEF DESIGNS FROM THE WALLS AT MITLA

by the word nacom, one the very honorable office of war chief, who was chosen always for three years, the other the by no means honorable lifelong office of the man who cut open the breasts of the victims of sacrifice.

Just as there was in addition the lowest order with the Mexicans, the priest pupils, tlamacazton, "little priests", who had to help the adult priests and learn the temple service, the priests' duties, and all priestly knowledge and traditions, so also did this class exist with the Zapotecs. Among the Zapotecs these priest pupils were called pixana, translated in Burgoa's work by "dedicados à los dioses". These were chosen, as Father Burgoa reports of the Zapotecos Serranos and Cajonos,[a] from the younger sons of caciques and people of rank, and were castrated when they were boys. It can not be ascertained from existing sources of information whether this custom was also practiced by the Zapotecs of the Valle de Oaxaca and in Tehuantepec. Burgoa [b] also gives the name pixana to the boys aiding in the work of the temple in Tehuantepec.

As regards religious practices, these consisted with the Zapotecs, as with the Mexicans and Maya peoples, chiefly in the burning of incense and in the offering of sacrificial gifts, small animals and birds, but especially in the offering of blood, which they drew from their own bodies. The usual places for this bloodletting were the tongue and the ear, and reports commonly state that they pierced their tongues and ears for the purpose. Burgoa, however, particularizes the place for the Zapotecs, namely, the veins under the tongue and behind the ear.[c] He reports another peculiarity which is not known of other tribes, namely, that they did this piercing of the flesh with a sharp bone or a stone knife, or with the pointed nail of the forefinger, which they allowed to grow long for this purpose.[d] The blood that trickled out was caught on blades of grass or bright feathers, and was thus offered to the idols as a sacrifice.

Among the Zapotecs, too, the most significant and important offering was human sacrifice, which, as Father Burgoa expressly states,[e] was performed with special solemnity and elaborate ceremonies. Modern scholars of note in the state of Oaxaca are now inclined to deny that the Zapotecs performed human sacrifices, apparently from a sentiment of patriotism. This is the case with the historian of Oaxaca, José Antonio Gay, and the author of the useful Catálogo Etimológico de Oaxaca, Manuel Martinez Gracida, to whom we owe also a description of Mitla. It is certain that neither the Zapotecs nor the Mayas sacrificed human beings in such multitudes as the Mexicans;[a] still, human sacrifices were offered, but less frequently, and, as it seems, only on stated occasions. We learn from the Zapotec dictionary of Father Juan de Córdova that there were two or three special occasions when human sacrifices were performed. Prisoners of war were sacrificed, and in this case the flesh of the victims was even eaten,[b] as in Mexico; human beings were also sacrificed to the deity of the harvests, that is, probably the earth goddess;[c] finally, children were sacrificed to the rain god.[d] In this last point there appears again a marked agreement with the ideas and the worship of the Mexicans, for in Mexico, too, children were sacrificed in the first five or six months of the year to the god of rain, tempest, and mountains, Tlaloc, as Sahagun relates in detail. The expression which was here used by the Mexicans as a technical term, nino-ixtlaua, or nextlaualiztli, "paying one's debts", corresponds exactly to the word used by the Zapotecs for this sacrifice of children, and, in fact, only in connection with it, ti-quixe-a cocijo, "I pay my debt to the rain god".

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[a] Work cited, chap. 58.

[b] Work cited, chap. 72.

[c] Work cited, chaps. 58, 64, 70.

[d] Work cited, chap. 70.

[e] See above.

A specially noticeable and peculiar ceremony practiced among the Zapotecs is indicated by some words of the dictionary as well as by a detailed description from Father Burgoa. The dictionary of Juan de Córdova contains, under the heading yerva ("grass, herb"), the following notice: "Tola, a grasslike plant (una yerva de los ervazales) out of which in ancient times they made a straw rope (una soguilla ò tomiza), which they brought to confession and laid down on the ground before the pijana and confessed what sins they wished to confess. Hence it comes that tola is still used with the meaning of 'sin', and that they also say lào-tola, 'place of sin or of confession', although the word also means 'a dark place'".

The expression pijana, that is, pixana, which Juan de Córdova uses here, seems to refer to a ceremony observed specially among the Zapotecos Serranos. For this word pixana, "dedicated to the god", was not used by them merely for the priest pupils, but generally for the priests of the idols. Father Burgoa describes very fully this ceremony of the Zapotecos Serranos, which was still practiced in his time, 1652, in a village in the neighborhood of San Francisco de Cajonos. Father Burgoa had come into this region on an inspection tour, and there he met with a stately old cacique, who was magnificently dressed in Spanish fashion, all in silk, and was evidently treated by the Indians with great respect. He came to pay his respects to the padre and to give an account of the progress of religious instruction in his village, and the padre perceived that he was a well-informed man, with complete command of the Spanish language, but, from some indications which long experience had taught him, his suspicions were aroused in regard to the man's soundness of faith. He imparted his suspicions to the vicar of the place, but received such satisfactory information from him that he thought he had deceived himself this time. It was, however, this same old man who, a few days later, was seen by a Spaniard roaming through the mountain forest after game, in a place hidden behind rocks and bushes, performing heathenish idolatrous ceremonies in the midst of a devout assembly. The Spaniard hastened away terrified, roused the monks while it was still night, and in the early morning, before an intimation of the matter had reached the Indian servants of the monastery, the vicar and the prelate, guided by the Spaniard, started on their way. After weary wandering in hunters' paths they reached the place at noon and found on the stone which served for an altar all the sacrificial gifts still fresh, " feathers of many colors, sprinkled with blood which the Indians had drawn from the veins under their tongues and behind their ears, incense spoons, and remains of copal, and in the middle a horrible stone figure, which was the god to whom they had offered this sacrifice in expiation of their sins (sacrificio de expiacion de sus culpas) while they made their confessions to the blasphemous priest and cast off their sins in the following manner. They had woven a sort of dish out of a tough herb which was specially gathered for this purpose (uno como fuente, ó plato muy grande), and, throwing this upon the ground before the priest, had said to him that they came to beg mercy of their god and pardon for the sins which they had committed in that year, and that they had brought them all carefully enumerated. They then drew out of a cloth pairs of slender threads made of dry maize husks (toto-mostle), that they had tied two by two in the middle with a knot, by which they represented their sins. They laid these threads on the dishes of braided grass and over them pierced their veins and let the blood trickle upon them, and the priest took these offerings to the idol and in a long speech he begged the god to forgive these, his sons, their sins which were brought to him and to permit them to be joyful and hold feasts to him as their god and lord. Then the priest came back to those who had confessed, delivered a long discourse on the ceremonies they had still to perform, and told them that the god had pardoned them and that they might be glad again and sin anew ".

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[a] No eran tan carniceros como los Mexicanos ("They were not so fond of carnage as the Mexicans"), says Father Burgoa, work cited, chap. 58. Gay concludes that Father Burgoa means in this passage that they performed no human sacrifices at all.

[b] Juan de Córdova distinguishes: peni yy, peni quij, peni yè "hombre que sacrificavan tomado en guerra, ó captivo presentado à un Señor para sacrificarle (a man taken in war that they sacrificed, or a captive presented to the lord to sacrifice)", and xòyaa, xòyaaquij, "si era guisado ò cocido ò asado para comerlo (if it was baked, stewed, or broiled for eating)".

[c] Tòti-nije-a, ti-còoa, quij nije, "sacrificar por las mieses hombre (to sacrifice for harvest a man)".

[d] Tòtia peni-quij-cocijo, tiquíxe a cocijo, "sacrificar hombre por la pulvia, ò nino (to sacrifice a man for rain, or a child)".

This elaborate ceremonial, the details of which were established beyond a doubt in the course of the inquisitorial examination to which all the participants were subjected, was not suggested to the Indians by Christian confession and absolution, but corresponds to the confession which was made in Mexico to the priests of the earth goddess, who was called, for this reason, Tlaelquani, " filth-eater ", and Tlazolteotl, " god of ordure ". Only in Mexico the necessity of this confession was confined to sins in veneribus, that is, to offenses against the sacredness of marriage, while with the Zapotecs, as appears from the entire description, this ceremony must have had a more general intention, applying to the expiation of all sins. The words which the padre reported in conclusion, namely, that the heathen priest told his penitents that they were now absolved from their sins and could sin anew, are probably to be taken quite seriously; for in Mexico also the idea prevailed that by this confession, which was made to the priests of the earth goddess, and the penance following upon it the sinner was entirely freed from his sins, to such an extent, indeed, that he could no longer be reached by any secular punishment, which in this case was very severe, stoning to death being the punishment for adultery. It cost the monks trouble enough to persuade the Indians that the confession which they demanded and received was followed by no such exemptions from the law.

There is another point of interest connected with the Zapotec ceremonies described above, namely, the use made of the grass rope on these occasions, for it serves to throw further light on certain passages in the picture writings. Here, as in the cases discussed in connection with the calendar, the Borgian codex and Codex Vaticanus B correspond most closely to the description.

Among the few fundamental characters which, as I have demonstrated,[a] recur in a typical manner in the different picture manuscripts of the group forming the Borgian codex, a representation of the tonalamatl occupies a prominent place. It is here represented as divided into twenty sections of 13 days each, to each of which is ascribed a certain deity who was the ruling power in it, and who was sufficiently indicated to the understanding of the Indians by the initial sign of the section. The order in which the deities follow one another here seems to have been, in a measure, a canonical one; for in other passages in these picture writings we find these deities ascribed to the twenty day signs in the same order, except that in the latter case a new deity is inserted between the tenth and the eleventh, and therefore the twentieth deity of the first (original?) series is omitted at the end. The seventeenth and eighteenth deities of the first series, or the eighteenth and nineteenth of the second, are the ones which seem to have special reference to the festival of expiation of the Zapotecs which has just been described.

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[a] Der Codex Borgia und die verwandten aztekischen Bilderschriften, Zeitschrift für Ethnologie, v. 19, 1887, p. (105) and following.

The expiation of sin is expressed in the clearest and most realistic way, especially by the picture of the first of these two deities. He is depicted in the form of a turkey cock, designated by the interpreter as Chalchiuhtotolin, "emerald fowl", and explained as the image of the god called by the Mexicans Tezcatlipoca, "smoking mirror".

By a natural and quite comprehensible transference of ideas sin was designated by the people of ancient Mexico as dirt, excrement, offal, and was portrayed in the picture writings, in a way to be recognized more or less clearly, in the form of human fæces. Tlaelquani, "she who eats ordure", was called by the Mexicans the "earth goddess", because she was the eradicator of sins, to whose priests the people went to confess their sins in order to be freed from them by this confession. In all the passages under consideration there is always depicted opposite Chalchiuhtotolin a man in the act of self-castigation, of drawing his own blood, or, in his stead, the implements and symbols of castigation. In the calendars of Codices Telleriano-Remensis and Vaticanus A, next to the representation of a penitent, sin is expressed by the conventional drawing of ordure (*a*, figure 60).[a] On page 51 of the Borgian codex, to which page 32 of Codex Vaticanus B corresponds, an eagle's claw is represented beside the symbols of castigation, offering the ordure to Chalchiuhtotolin to eat (*b*, figure 60).[b] By this means the "emerald fowl", the image of Tezcatlipoca, is likewise designated as Tlaelquani, the eradicator of sins.[c] Finally, in the Borgian codex, page 29, to which pages 4 and 77, Codex Vaticanus B, correspond, opposite Chalchiuhtotolin, there is (*a*, figure 61) the penitent (who bores out his eye with a sharpened bone) in the middle of a ring, which appears from its coloring to be of braided grass, since it consists of alternating green and white sections, the white ones dotted with red, indicating the sprinkling with blood. This ring evidently represents the tola of the Zapotecs, the rope of grass, whose use is explained above.

The same rope of grass is also represented in page 30 of the

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[a] In the third section of the calendar, in the place where in some picture writings the earth goddess is represented opposite the god Tepeyollotl, in others, instead of the former, there is the picture of a man eating his own excrement (hieroglyph for Tlaelquani) and the symbol of the moon (see figure 65).

[b] I had not arrived at a full comprehension of all these circumstances when I wrote my work on Tonalamatl der Aubinschen Sammlung.

[c] This signification of Tezcatlipoca is also supported by other passages in the picture writings, specially by the following codices: Borgian, p. 27; Vaticanus B, pp. 6, 79, or Borgian, p. 46; and Vaticanus B, p. 37.

Borgian codex, corresponding to pages 3 and 76 of Codex Vaticanus B, with the deity of the nineteenth day sign, *b* and *c*. Here is apparently not a question of directly doing penance, but of pious exercises in general, especially of fasting. I have copied these pictures, first, because the figure of Codex Vaticanus B, page 3, *c*, shows clearly a rope of grass by the ends of the braid which are cut off below and terminate above in small flower heads, after the manner of the malinalli, and secondly, because this rope of grass recurs in Mexican picture writings, to wit, as a symbol for "fasting" in the hieroglyphs of the kings Nezahualcoyotl, "the fasting prairie wolf", and Nezahualpilli, "the fasting prince", of Tetzcoco, as they are depicted in the Codex Telleriano-Remensis, *d* and *e*.

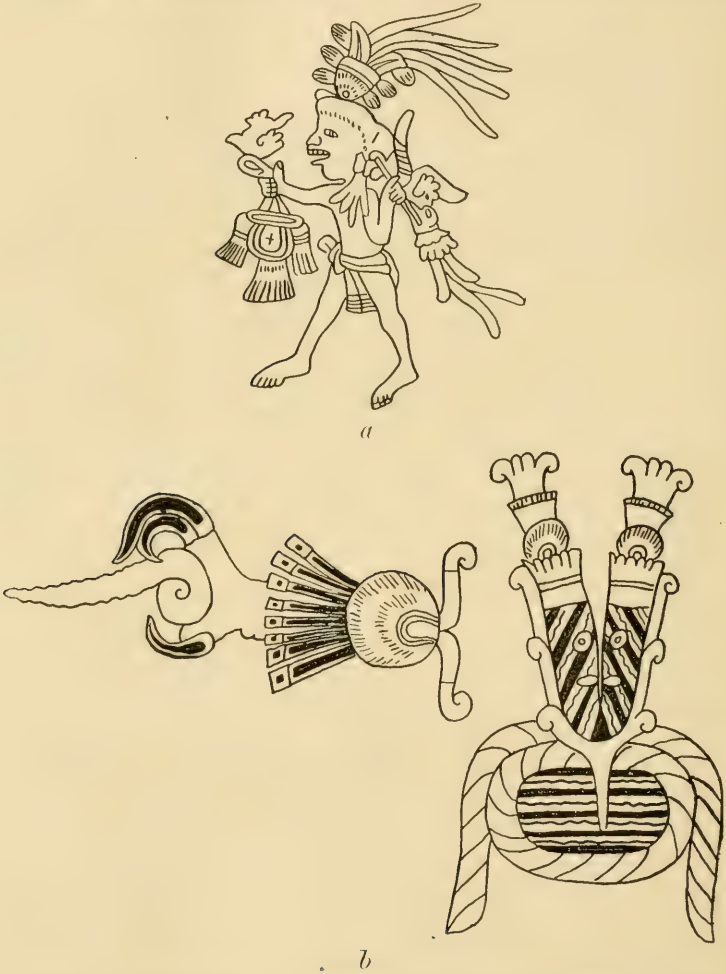

FIG. 60. Drawing blood from the ears, and implements of castigation, from Mexican codices.

Although it is therefore plain that the symbol of the grass rope was not unknown to the Mexicans, still it is frequent only in the picture writings of the Borgian codex group, and in this group is represented only particularly in connection with expiation of sin. Its occurrence, like that of the representation of the four rain gods (figure 58) and the deer figures bearing the day signs (figure 59), seem therefore to point to the conclusion that the picture writings of the Borgian codex group are either actually Zapotec or belong to a territory whose people resembled the latter in their religious and calendric notions. This is a fact which we have every reason to keep well in mind.

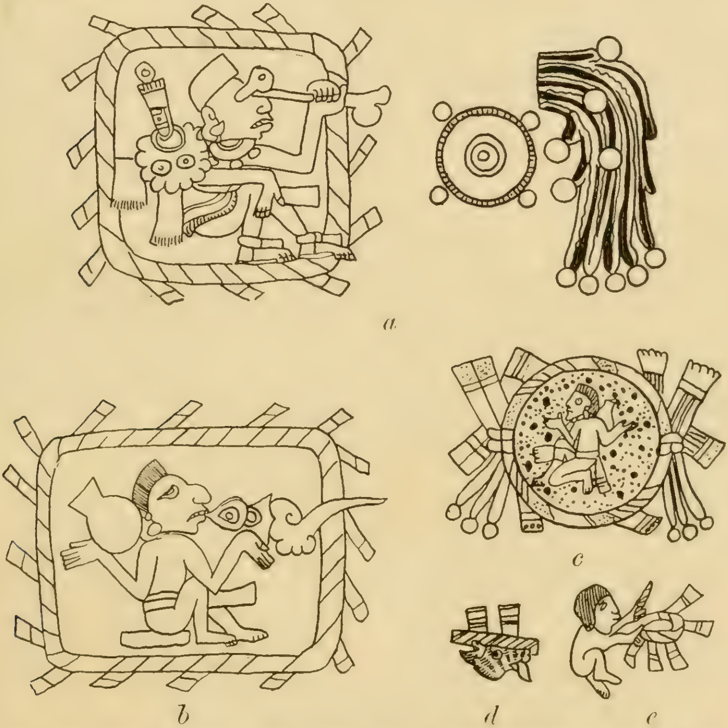

Fig. 61. Self-punishment and symbols of two kings from Mexican codices.

The special signification attached to the twisted grass rope, tola, among the Zapotecs also explains the singularly baneful part which the "grass" malinalli, "the twist", plays as a day sign. For there is probably no doubt that this Mexican malinalli and the Zapotec tola are the same thing, although tola was not used in the Zapotec calendar for malinalli, but pija, chija, corresponding to the literal sense of malinalli. This fact seems in its turn to indicate that in the land of the Zapotecs we are not very far from the spot where the day signs originated and where the whole remarkable system of the Central American calendar was elaborated.

DEITIES AND RELIGIOUS CONCEPTIONS OF THE ZAPOTECS

The Zapotec dictionary, by Father Juan de Córdova, already frequently mentioned, forms a chief source of information concerning the immediate religious conceptions of the Zapotecs, the forms of the gods which were worshiped by them and to which they turned in every need and for the satisfaction of all their desires. Among the different names and designations, which, generally speaking, are rather designations of activities than true names, the most prominent of all are those pertaining to a creative deity. In their meaning and application these designations were very likely similar to the Mexican Totecuyo, Tloquê Nauaquê, Ilhuicauâ, Tlaticpaquê, Youalli ehecatl, and the like, that is, they were, like these, used to a certain extent as a general appellation of the deity, and probably also in addressing the different deities, or as attributes to name them by. Their construction and their etymology, however, furnish a clue to the lines along which speculative thought moved among the Zapotecs in reference to the origin of all things. I give here the names and the Spanish expression of which they are supposed to be a translation, according to the dictionary of Father Juan de Córdova. They are as follow:

Coqui-Xèe, Coqui-Cilla,
Xèe-Tào, Pixèe-Tào, Cilla-Tào,
Nixèe-Tào, Ni-Cilla-Tào,
Pije-Tào, Pij-Xòo, Pije-Xòo,

> "God without end and without beginning, so they called him without knowing whom" (Dios infinito y sin principio, llamavanle, sin saber à quien).

Coqui-Cilla, Xèe-Tào, Piyee-Xào, Chilla-Tào,

> "The uncreated lord, who has no beginning and no end" (el Señor increado, el que no tiene principio y fin).

Piye-Tào, Piye-Xòo,
Coqui-Xèe, Coqui-Cilla, Coqui-Nij,

> "God, of whom they said that he was the creator of all things and was himself uncreated" (Dios que decian que era creador del todo y el increado).

As to the elements which are contained in these appellations, coqui simply means "lord", "leader", "cacique", "king"; tào and xòo are adjectives; tào (too, or roo) means "great". With the prefix for animate beings, the word forms the customary expression for "god" (Pitào, Bitoo, that is, "the great one"). Xòo is a synonym of the former, and means "strong", "powerful". Ni and pi are prefixes; the second is the prefix just mentioned for animate beings, while the first has a more general meaning and is equivalent to "he who is". There then remain as essential elements in the above appellations only the following: Xee, cilla (xilla, chilla), pij (pije, piyee), nij.

Of these different expressions, the first two, xee and cilla, are synonyms. They are regularly used together as a compound, with the meaning of "beginning", "origin". The fundamental meaning of both is doubtless "growing light", "morning"; cilla is the technical expression for "morning"; te-cilla, "in the morning"; zoo-cilla, piye-zoo-cilla, or toa-tilláni-copijcha, "the quarter of the heavens belonging to the morning", "the east", or "where the sun rises". Xilla and chilla are phonetic variants of cilla. We must probably accept "bright" as the exact meaning of xee. Alone or accompanied by the root ati xee is often used with the meaning "pure". A direct reference to the morning lies in the words quixee and quixij, properly "the coming morning", which are used for "to-morrow", that is, "the next day".

"The lord of the beginning" (Coqui-Xee, Coqui-Cilla), or "the great beginning" (Xèe-Tào, Pixee-Tào, Cilla Tào), is thus properly "the lord of growing bright, of the morning". Translated into Mexican it would read Tlauizcalpan Tecutli. The Mexicans used this word for the morning star.

An entirely different meaning lies in the third word. Pij, or chij, for p and ch are here and frequently in Zapotec interchangeable,[a] means "to be turned", "to turn oneself". From that is developed, on the one hand, the meaning pij, pije, chije, piyèe, pèe, "that which whirls", "the wind"; on the other hand, the meaning quoted above of pije, piye "(rotation, rotation of time), calendar" and chij, chee, yee, "course of time", "time", "day". The latter meaning does not concern us here. But from the meaning, "wind", the further ones of "breath", "respiration"[b] and "inner vital principle", "soul", "spirit"[c] have been developed, and we must refer to this for the names of the creative deity quoted above. Pije-Tào and Pij-Xòo are "the great wind", "the strong wind" and "the great, the strong, powerful (living) spirit".

Finally, the fourth word, nij, is the same as nija, which means "foot", "lower end", "beginning". Coqui-Nij is therefore only another, a prosaic, expression for the meaning which lies in the name Coqui-Xèe, Coqui-Cilla.

However, the association of ideas which arises from the use for the creative deity of names of different origin, preserved by the Vocabulary, has also another interesting and important side. I have translated above the Coqui-Xee, Coqui-Cilla, of the Zapotecs by the Mexican name Tlauizcalpan Tecutli. If we should seek to translate Pije-Tao, Pije-Xoo, into Mexican, then a strictly synonymous, though by no means literal, rendering would be the name Quetzalcoatl. Here we find a connecting link, which throws light upon the logic of the relation between objects and ideas that have hitherto existed rather incongruously side by side. The Mexican legend tells of the wind god Quetzalcoatl that after his death or after his disappearance in the sea of the east he changed himself into Tlauizcalpan Tecutli, the lord of the dawn, that is, the morning star, the planet Venus. The Zapotec names explain this change to us; for it is the creative deity who is at once the soul, the spirit, the living principle of all things and the lord of the dawn, of the coming day, who is conceived of as merged in the star of the dawn, the luminous planet, which was called Pelle-Nij by the Zapotecs and Citlalpol, "the great star", by the Mexicans. It appears, moreover, from the frescoes which are reproduced in this work, as we shall see below, that Quetzalcoatl occupied in fact the central place in the Zapotec Olympus, at least as he was understood and presumably expounded by the priests.

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[a] This interchangeableness evidently occurs in the case before us because the root is properly ii or ee, which is combined with a prefix (originally nominal) for the formation of an enlarged stem.

[b] Cobaa, pee, pije, chije, "anhelito" (Juan de Córdova, Vocabulario).

[c] Pij, chije, "viento, anima, y espiritu" (Juan de Córdova, Vocabulario).

Tlauizcalpan Tecutli, the lord of the dawn and of the evening twilight, who is also designated by the interpreter as the first light which illuminated the earth in the period before the flood, that is, before the creation of the sun, is represented in the calendar opposite the fire god in the ninth section, which begins with the day "1 snake". As the representations of this god are important also for future discussion, I have given them together in figures 62 and 63, taken from Codices Borgia, page 46, Vaticanus B, page 40, and Telleriano-Remensis II, page 14, and the Tonalamatl of the Aubin collection.

Coqui-Xee, Coqui-Cilla, the "lord of dawn", and Pije-Tao, Pije-Xoo, the "mighty, strong wind", however, designate, as it were, merely the principle, the essence of the creative deity or of deity in general, without reference to the act of creating the world and human beings. In respect to this event itself the mythologies of the Central Americans, as well as those of most of the peoples of the earth, have placed at the beginning of things a male and female deity. These were called by the Mexicans Tonacatecutli and Tonacaciuatl, "lord" and "mistress of our flesh" or "of subsistence", or Ometecutli Omeciuatl, "lords of duality". In the calendars they occupy the first place and are represented as the deities dominating the beginning, the first division, whose initial sign is "1 crocodile". They are figured always clothed in light, varied, and rich colors. The male deity is more or less definitely identified with the sky, the sun, or the fire god, who was at the same time the god of the chase and of war; the female deity, with the earth or the water, the element which imparts fruitfulness to the earth. Thus in the Tonalamatl of the Aubin collection, on the first page, the fire god and the water goddess are placed opposite one another as rulers of the first section of the calendar.

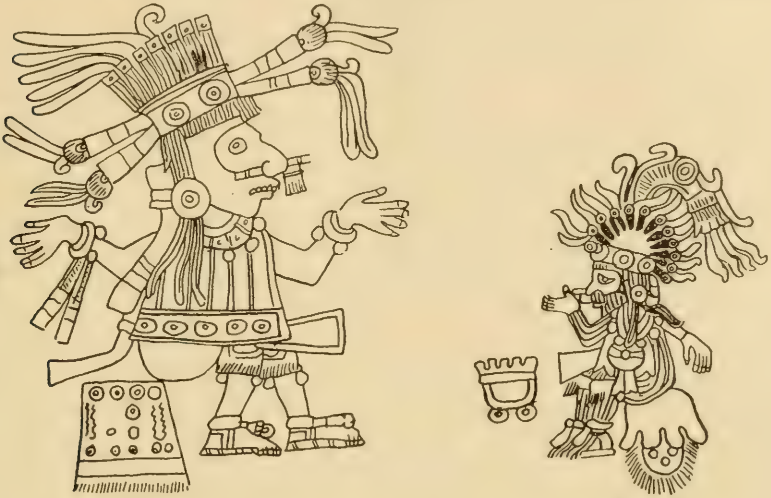

FIG. 62. Deity of the morning star, from a Mexican codex.

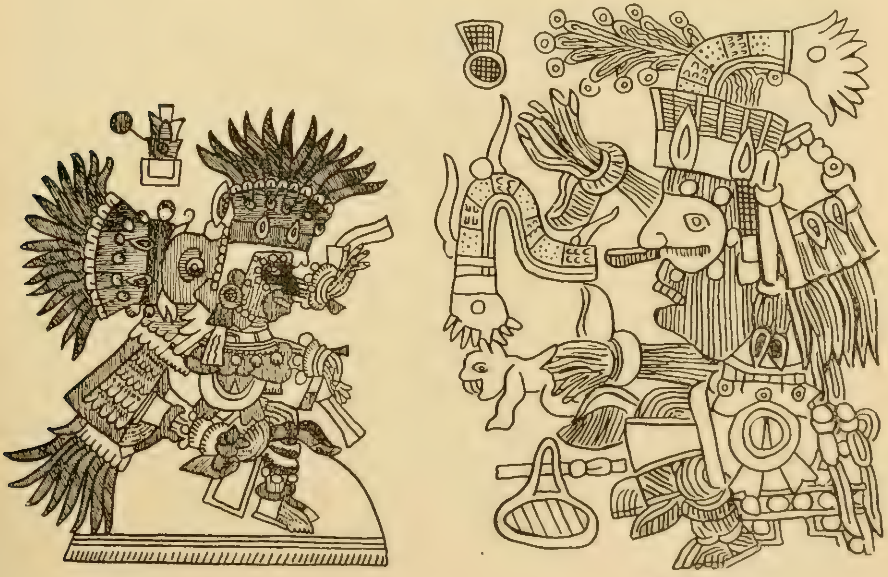

FIG. 63. Figures of the deity of the morning star, from Mexican codices.

We find a similar notion among the Zapotecs. Under the heading criador, "creator", the dictionary of Father Juan de Córdova gives the following two different deities:

Cozaana, Pitoo-Cozaana,
"Creator, the maker of all beasts" (Criador, ò hacedor de todas los animales).
Huichaana,
"Creator, the maker of men and of fishes" (Criador asi de los hombres y peces).

Zaana means "to give birth", "to beget"; and Xaana, chaana, are probably mere phonetic variants of the same stem. Cozaana, however, is the nomen agentis, formed directly from this stem, and therefore means "one who gives birth" or "procreator". Huichaana, Huechaana imply a causative formed from this stem. Cozaana and Huichaana and Huechaana are both used alike for "descent", "race" (linaje generalmente). Hence word analysis does not suffice to determine what deities are meant by the above names, and we shall have to look for other applications of these expressions, and these other applications will make it possible to determine the deities without possibility of error.

Cozaana is used concerning the sun. The proper Zapotec name for the sun is copijcha. It has also a briefer name, pitoo, as in Mexican it has the name Teotl, that is, "god". But as the "great procreator of all things" (el Sol con forme al engendrar las cosas que las engendra), the dictionary calls it Cozaana-tao quizaha-lao. It seems, therefore, as if we ought to accept this as the original meaning of Pitoo-Cozaana; the sun as the male portion of the creative deity; and if this Pitoo-Cozaana was designated specially as creator of beasts, also as "god of the chase" and as "god of beasts, to whom the hunter and the fisher sacrificed in order to be helped", it seems as if we must recall also the Mexican point of view, according to which the sun god is also looked upon as the god of the chase and of war. This conception, however, is in a measure contradicted by the fact that in two places in the dictionary Cozaana is spoken of, according to the proper meaning of the word, as "procreatrix" (engendradora, procreadora) of beasts and of fishes. Since, now, the beasts of the woods and fields, as we shall see below, are brought into especial connection with the earth, it is still possible that Cozaana also has this meaning and is to be considered as designating either the female portion of the dual creator or, as the male portion, a god of the earth and lord of beasts.

Huechàana, Huichàna, is translated also in the dictionary by "water", "element of water", and Huichaana, Pitao-Huichaana, Cochana, Huichaana, by "god, or goddess, of little children, or of birth, to whom those giving birth sacrificed" (dios ò diosa de los niños, ó de la generacion, à quien las paridas sacrificavan). Hence it is clear that this is the female part of the creative deity who, as I noted above, is represented opposite the male creative deity, the fire god, in the Tonalamatl of the Aubin collection in the form of the water goddess, Chalchiuhtlicue; and this, its special meaning, explains the singular combination by which, as stated above, Huichaana is called the creator, or rather the creatrix, of men and of fishes.

In this connection I must mention a legend, which is not told of the Zapotecs themselves but of that fragment of the Mixtec nation which lived in the immediate neighborhood of the royal city of the Zapotecs, in the place called Coyolapan by the Mexicans, the present Cuilapa.

This legend, contained in chapter 4, book 5, of Origen de los Indios, by Fray Gregorio Garcia, which otherwise contributes very little to the ancient history of Central America, gives the following account of the origin of things:

> In the year and in the day of obscurity and darkness, when there were as yet no days nor years, the world was a chaos sunk in darkness, while the earth was covered with water, on which slime and scum floated. One day the deer god (el dios Ciervo), who bore the surname "puma snake" (Culebra de Leon), and the beautiful deer goddess (diosa Ciervo) or jaguar snake (Culebra de Tigre) appeared. They had human form, and with their great knowledge [that is, probably with their magic] they raised a great cliff over the water and built on it fine palaces for their dwelling. On the summit of this cliff they laid a copper ax with the edge upward, and on this edge the heavens rested. These buildings stood in Upper Mixteca, close to the place Apoala,[a] and the cliff was called "place where the heavens stood". The gods lived many centuries in peace, enjoying bliss, until it happened that they had two little boys, beautiful of form and skilled and experienced in all arts. For the days of their birth they were named "Wind 9 Snake" (Viento de neuve Culebras) and "Wind 9 Cave" (Viento de neuve Cavernas).
>
> Much was lavished on their education, and they possessed the knowledge of how to change themselves into an eagle or a snake, to make themselves invisible, and even to pass through (solid) bodies.
>
> While these gods were enjoying the profoundest peace (passed their days in profoundest peace) they decided to make an offering and a sacrifice to their ancestors. They took for this purpose pottery incense vessels, placed firebrands in them, and burned a quantity of finely ground poison plant (tobacco). That was the first offering (to the gods). Then they made a garden with plants and flowers, trees and fruit-bearing plants, and sweet-scented herbs. Adjoining this they made a grass-grown level place (un prado) and equipped it with everything necessary for sacrifice. The pious brothers lived contentedly on that piece of ground, tilled it, burned poison plant (tobacco), and with prayers, vows, and promises they supplicated their ancestors to let the light appear, to let the water collect in certain places, and the earth be freed from its covering (water), for they had no more than that little garden for their subsistence. In order to strengthen their prayer they pierced their ears and their tongues with pointed knives of flint and sprinkled the blood on the trees and plants with a brush of willow twigs.

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[a] Apoala (Mexican A-pouallan, "accumulation of water") is the Mixtec Yuta-Tnoho, or Yuta-Tnuhu, "the river of generation", where the ancestors of the Mixtec rulers are said to have come forth from trees which stood by a deep cañada.

> The deer gods had more sons and daughters; but there came a flood in which many of these perished. After the catastrophe was over the god who is called the "creator of all things" formed the heavens and the earth and restored the human race.

Thus we have here the primal pair of gods and the actual creator god who procured for men light and the other conditions of human existence by means of his endeavors and self-castigation. The former, since they were designated as "deer god" and "deer goddess", were probably also considered as the father and the mother of animals, like the Pitoo-Cozaana of the Zapotecs. The latter, the real practical creative god, has, as among the Zapotecs, an unmistakable connection with Quetzalcoatl, since the two names given here are combined with the determinative word "wind"; but this practical creative god is here conceived of as twin brothers. The names "9 snake" and "9 cave" appear to have been intended to mean the light and the dark brother. The second name is interesting because the word "cave" evidently forms the connecting idea between the Mexican Calli, "house", and the Maya and Zapotec Akbal and Ela, "night", the names of the third day sign, which apparently differ so very much from one another. Moreover, a dual nature is also indicated in Quetzalcoatl, since the name, as we know, can be translated "decorative feather snake" as well as "the precious twin". Xolotl appears in the calendar pictures as the twin brother of Quetzalcoatl. He is the sinister god of monstrosities, who wears the eca-ilacatz-cozquitl, the spirally-twisted wind ornament (cut from a snail shell), and the ear pendants made from the shell of the whelk, and also the head ornament of Quetzalcoatl.

The primal pair of gods, as I have already mentioned, occupy the first place in the calendars of the picture writings, as rulers of the first section. In conformity with the peculiar position which Quetzalcoatl occupies in relation to the primal pair of gods and as the creator of the world and man, he follows the primal gods, coming second, as the ruler of the second division of the calendar. In the third place, as ruler of the section beginning with the day "1 deer", there then follows a god in the form of a jaguar, who sits above a mountain cave, before him the sign of war (shield, bundle of javelins, and spiked club), food (a vessel with maize and a pulque jar), and a costly neck ornament, and opposite him, in some manuscripts (Codices Telleriano-Remensis and Vaticanus A), Quetzalcoatl, and in others (Codices Borgia, page 52, and Vaticanus B, page 46), the earth goddess Tlazolteotl or Tlaelquani, who apparently bring a bound captive to him for sacrifice (see figure 64, which is copied from the Borgian codex, page 52). There, where in the series of gods of the day signs this god would be expected to be with his female companion, at the third day sign Calli, "house" (or Zapotec Ela, Maya Akbal, "night"), is the earth goddess alone expressed by the hieroglyph of her name Tlaelquani, "dirt eater", namely, by the picture of a man eating his own excrement, with the symbol of the moon (figure 65).

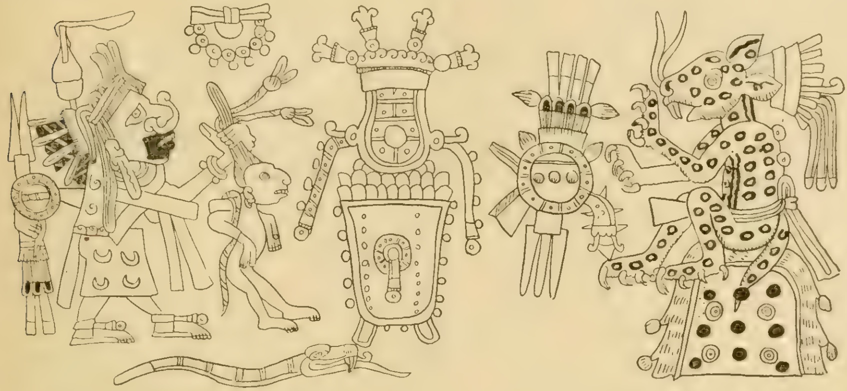

FIG. 64. Tepeyollotl and Tlacolteotl, Mexican deities, from the Borgian codex.

This god of the third calendar section is named Tepeolotlec by the interpreter of the Codex Telleriano-Remensis. This is evidently only a distortion of Tepeyollotl, "heart of the mountain (of the place, village, country)", who was named as the eighth of the series of the nine lords, the so-called "acompañados de la noche", and who (Borgian codex, page 25) is represented in the form of figure 66. The interpreter makes the following remark concerning Tepeolotlec:

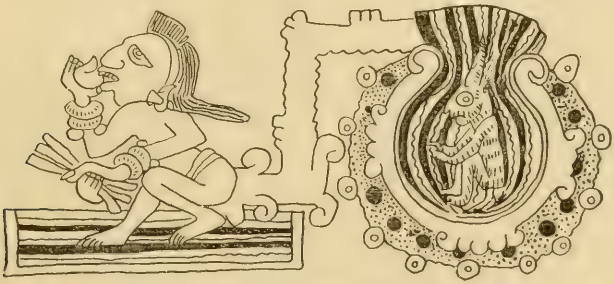

FIG. 65. Tlaelquani, Mexican goddess, from the Borgian codex.

> This name refers to the condition of the earth after the flood. The sacrifices of these 13 days were not good, and the translation of their name is "dirt sacrifices". They caused palsy and bad humors . . . This Tepeolotlec was lord of these 13 days; in them were celebrated the feast to the jaguar (hazian la fiesta en data à tigre) and the four last preceding days were days of fasting . . . Tepeolotlec means the "lord of beasts". The four feast days were in honer of the Suchiquezal, who was the man that remained behind on the earth upon which we now live. This Tepeolotlec is the same as the echo of

the voice, when it reechoes in a valley from one mountain to another. . . . This name "jaguar" is given to the earth, because the jaguar is the boldest animal, and the echo which the voice awakens in the mountains is a survival of the flood, it is said.

The above description makes it plain that this figure must be considered a deity of the earth, of the hollow interior of the earth and the mountain wilderness, who has nothing to do with the light, pure upper regions. We seek in vain for mention of this deity and for statements concerning his worship in the works of the historians who lived near the capital of Mexico in the midst of Mexican-speaking people, and who therefore drew their information chiefly or exclusively from Mexican traditions. Neither Sahagun, Durán, Motolinia, nor Mendieta mention this god. On the other hand, we have reliable information that in the territory with which we are here concerned, and indeed among both the kindred nations of the Mixtecs and Zapotecs, he was known and even received special veneration.

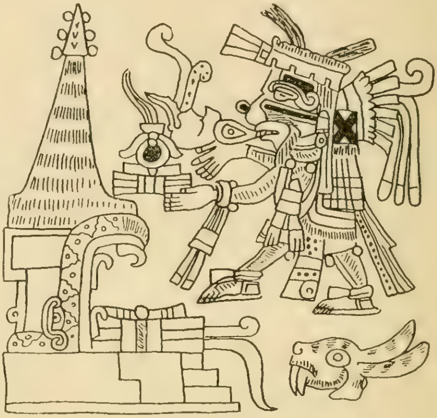
FIG. 66. Tepeyollotl, Mexican deity, from the Borgian codex.

As Yoopaa, or Mictlan, was the holy city of the Zapotecs, so Ñuundecu, or Achiotlan ("the place of the Bixa Orellana"), was the holy city of the Mixtecs, where the high priest had his abode and where there was a far-famed oracle, which indeed King Motecuhzoma is said to have consulted when he was disturbed by the news of the landing of Cortes. The chief sanctuary was situated on the highest peak of a mountain. Here, as Father Burgoa relates,[a] there was among other altars one of an idol "which they called the 'heart of the place or of the country (Corazon del Pueblo)', and which received great honor. The material was of marvelous value, for it was an emerald of the size of a thick pepper pod (capsicum), upon which a small bird was engraved with the greatest skill, and, with the same skill, a small serpent coiled ready to strike. The stone was so transparent that it shone from its interior with the brightness of a candle flame. It was a very old jewel, and there is no tradition extant concerning the origin of its veneration and worship". The first missionary of Achiotlan, Fray Benito, afterward visited this place of worship and succeeded in persuading the Indians to surrender the idol to him. He had the stone ground up, although a Spaniard offered 3,000 ducats for it, stirred the powder in water, and poured it upon the earth and trod upon it, in order at the same time to destroy the heathen abomination entirely, and to demonstrate in the sight of all the impotence of the idol. It is worthy of notice that there existed in the immediate neighborhood of this place of worship, in the middle of the plain of Yancuitlan, a second sanctuary, which also had a high priest, who, however, was subordinate to the one at Achiotlan. This sanctuary consisted of a great cave, in the rear of which the idol was set up.[a] To a certain extent it seems to have been considered equivalent to the aforesaid sanctuary situated on the summit of the mountain, for it is said that those who came hither from a distance, those who were hindered by their inability to walk so far, and the women, who could not climb the rugged mountains of Achiotlan, made their offerings here.

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[a] Work cited, chap. 28.

It is true that, as far as the Zapotec territory is concerned, this god is not expressly named in connection with the chief sanctuary of the country at Mitla; but in the neighborhood of Tehuantepec, on the great salt-water lagoon, which was called in Burgoa's time "Laguna de San Dionisio", and which was inhabited by the small tribe of the Huaves, there was, as Burgoa relates,[b] a small wooded island shaped like a temple pyramid and abounding in game. Upon this island was "a deep and extensive cave, where the Zapotecs had one of their most important and most revered idols, and they called it 'soul and heart of the kingdom (Alma y Corazon del Reyno)' because these barbarians were persuaded that this fabulous deity was Atlas, upon whom the land rested and who bore it on his shoulders, and when he moved his shoulders the earth was shaken with unwonted tremblings; and from his favor came the victories which they won and the fruitful years which yielded them the means of living". There was an oracle connected also with this temple, and the last king of Tehuantepec, Cocijo-Pij, is said to have received here from the god the information that the rule of the Mexicans was at an end and that it was not possible to withstand the Spaniards. When the baptized king was later seized and imprisoned on account of his falling back into idolatry the vicar of Tehuantepec, Fray Bernardo de Santa Maria, sought out the island, forced his way into the cave, and found there a large quadrangular chamber, carefully swept, with altarlike structures around on the sides, and on them many incense vessels, rich and costly offerings of valuable materials, gorgeous feathers, and disks and necklaces of gold, most of them sprinkled with freshly drawn blood. There is no record of finding an idol here. Unlike the padre Fray

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[a] Burgoa, work cited, chap. 32.

[b] Work cited, chaps. 72 and 75.

Benito, the vicar of Tehuantepec seized all these ornaments, an inventory was taken, and by order of the viceroy the proceeds of the sale of these objects were employed for the benefit of the church.

It is certain that the expressions mentioned here, "Corazon del Pueblo" and "Corazon del Reyno" are only translations of the name Tepeyollotl, for tepetl means in Mexican not merely "mountain", but also "place"; tepe-pan, "in the place", "in the country"; cecen tepepan is translated in Molina's dictionary by "in every town" (en cada pueblo ó ciudad). The Mixtec translation of the name Tepeyollotl would probably have been **Jni-ñuu**; and the Zapotec, Lachi-Gueche. However, no deities of any such names are mentioned. According to the passage last quoted it may nevertheless be assumed with certainty that this god, Corazon del Reyno, was a deity of the earth and that earthquakes were ascribed to him. It is therefore probable that he is identical with the god who is mentioned in the dictionary of Father Juan de Córdova as Pitao-Xoo, "god of earthquakes" (dios de los temblores de tierra).

Moreover, the knowledge and the worship of this god was not confined to the Mixtec or Zapotec races, but existed, perhaps more extensively, among the Maya tribes bordering on the south, the Zotzils and the Tzentals, for there is no doubt that the often-mentioned god Votan of the Tzentals is identical with Tepeyollotl, hence with the Zapotec Pitao-Xoo. This appears from the etymology of the name, which, it seems, means in Tzental, simply, "heart", "breast".[a] This is furthermore expressly mentioned by Bishop Nuñez de la Vega, who states at the conclusion of the paragraph referred to that this god was called in some provinces Corazon de los Pueblos; and, finally, this is proved by the fact that this Votan is also the ruler of the third day sign. The third day sign, that is, the sign which the Mexicans call Calli, "house", and the other Maya races generally call Akbal, "night", by the Tzentals is simply called Votan, after the god himself. I quote here the statement which Bishop Nuñez de la Vega makes concerning this deity, because it serves to complete the picture in some particulars. The bishop writes:[b]

> Votan is the third heathen in the calendar [that is, the deity who is ascribed to the third division of the calendar], and in the little history written in the Indian language all the provinces and cities in which he tarried were mentioned; and to this day there is always a clan in the city of Teopisa that they call the Votans. It is also said that he is the lord of the hollow wooden instrument which they call tepanaguaste [that is, the Mexican teponaztli]; that he saw the great wall, namely, the tower of Babel, which was built from earth to heaven at the bidding

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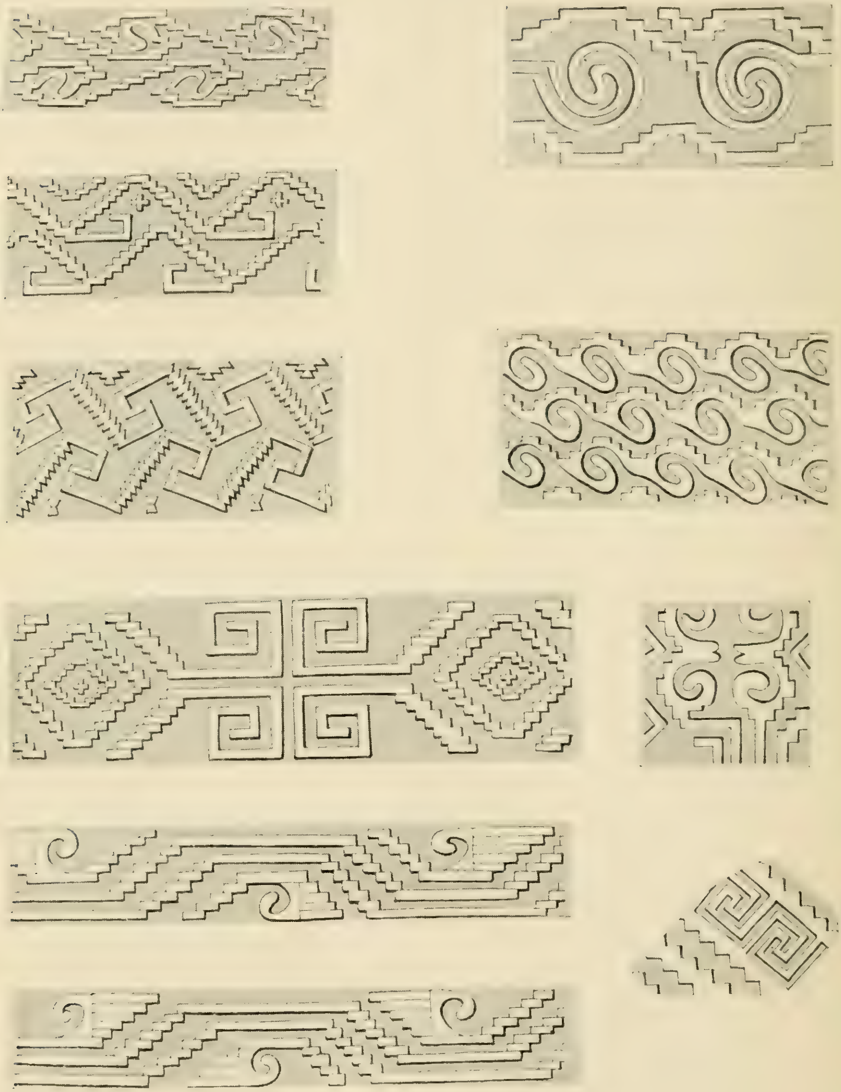
[a] Brinton has proved this in his book Hero Myths, p. 217. In a copy of bilingual directions for administering the sacrament, of the year 1707, which is in Brinton's possession, the following passage occurs: Ta zpizil auotan, "con todo tu corazon (with all thy heart)"; xatigh xny auotan, "hirrendote en los pechos (wounding thee in the bosom)"; zghoyoc alagh ghoyoc, "dí conmigo (speak with me)".

[b] Nuñez de la Vega, Constituciones Diocesanas Preambulo, no. 34, sec. 30.



RELIEF DESIGNS FROM THE WALLS AT MITLA

of his grandfather, Noah; and that he was the first man whom God sent to divide and apportion this country of India, and that there, where he saw the great wall, he gave to every nation its special language. It is related that he tarried in Huehueta [which is a city in Soconusco] and that there he placed a tapir and a great treasure in a slippery [damp, dark, subterranean] house, which he built by the breath of his nostrils, and he appointed a woman as chieftain, with tapianes [that is, Mexican tlapiani, "keepers"] to guard her. This treasure consisted of jars, which were closed with covers of the same clay, and of a room in which the picture of the ancient heathens who are in the calendar were engraved in stone, together with chalchiuites [which are small, heavy, green stones] and other superstitious images; and the chieftainess herself and the tapianes, her guardians, surrendered all these things, which were publicly burned in the market place of Huehueta when we inspected the aforesaid province in 1691. All the Indians greatly revere this Votan, and in a certain province they call him "heart of the cities" (Corazon de los pueblos).

Thus writes Nuñez de la Vega. I add in conclusion that the bat god also, who was the national god of the Cakchikels, whose form is frequently met with on antiquities in Guatemala and Yucatan, and whose picture, as I have proved,[a] is to be found in the Borgian, Vaticanus B, and Fejérváry codices, may have had some remote connection with this Pitao-Xoo, Tepeyollotl, or Votan.

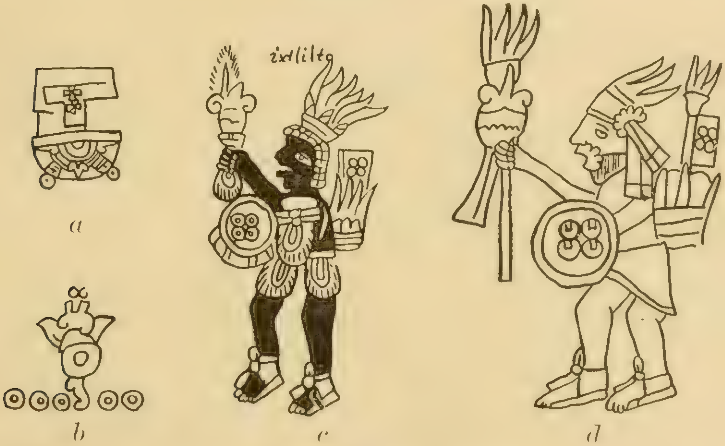


Fig. 67. Mexican symbols and figures of deities, from the Mendoza codex and the Sahagun manuscript.

The sun, as I mentioned above, was called by the Zapotecs Copijcha or, more briefly, Pitoo, "the god". So also the Mexicans in familiar speech frequently said Teotl, "god", when they meant the sun; Teotl ac, "the god has gone in (gone into the house)", is equivalent to the "sun has gone down"; and wherever in Mexican city hieroglyphs the syllable teo was to be represented it is always expressed by the picture of the sun (*a*, figure 67). The cities also whose names contained the syllable teo were generally ancient seats of sun worship.

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[a] Zeitschrift für Ethnologie, v. 26, 1894, pp. (577)–(585).

like the famous Teotihuacan, abandoned in prehistoric times, where in the midst of desolated fields and the flat mounds which indicate the sites of ancient dwellings still rise the two high pyramids of the sun and the moon.

There is no actual record of sun worship among the ancient Zapotecs; but there was, and is, in the ancient tribal country of the Zapotecs, in the Valle de Oaxaca, a place which is called in Mexican Teotitlan, "near the sun god"; in Zapotec, Xa-Quie, "at the foot of the stone". This village, as Father Burgoa relates,[a] was one of the most important and oldest cities of the Zapotecs, and there, on a rocky crag, directly opposite the houses of the village, was a very ancient sanctuary, where an idol uttered oracles in a terrific, rumbling voice, which sounded as if it came from the depths of the earth; and this idol was said "to have come from heaven, in the form of a bird, in a luminous constellation" (fingiendo haver venido del cielo, en figura de ave, en una lumiosa constelacion).

It admits of no doubt that this luminous bird is to be regarded merely as a particular conception of the sun god. So also descended about noon in Izamal, as Father Lizana relates,[b] the idol called Kinich Kakmo, which means, "sun with a face whose rays were of fire", to consume the sacrifice on the altar, "as the red guacamayo (macaw) flies down with his bright feathers". We often meet with similar conceptions on the American continent. The Zapotecs called the sun's rays simply "foot, sting, or plumage of the sun" (xinnij, xicòocho, xilouela copijcha).[c]

This Zapotec Teotitlan generally had the addition del valle ("of the valley"), to distinguish it from the Teotitlan which is situated on the road from Oaxaca, on the boundaries of the Mazateca, and which on that account generally receives the addition of del camino ("of the road") (see the hieroglyph in *a*). Herrera makes some statements concerning the latter place,[d] from which it would seem that there the god Xipe, "the flayed one", received special worship. In fact, a number of characteristic Xipe representations from Teotitlan del camino have found their way into the collections, together with representations of the rain god. The Royal Museum of Ethnology in Berlin possesses a beautiful large pottery image of Xipe, which Professor Felix obtained in Teotitlan del camino. But, during my stay in that place, I found most frequently complete figures and fragments of a deity distinguished by a white

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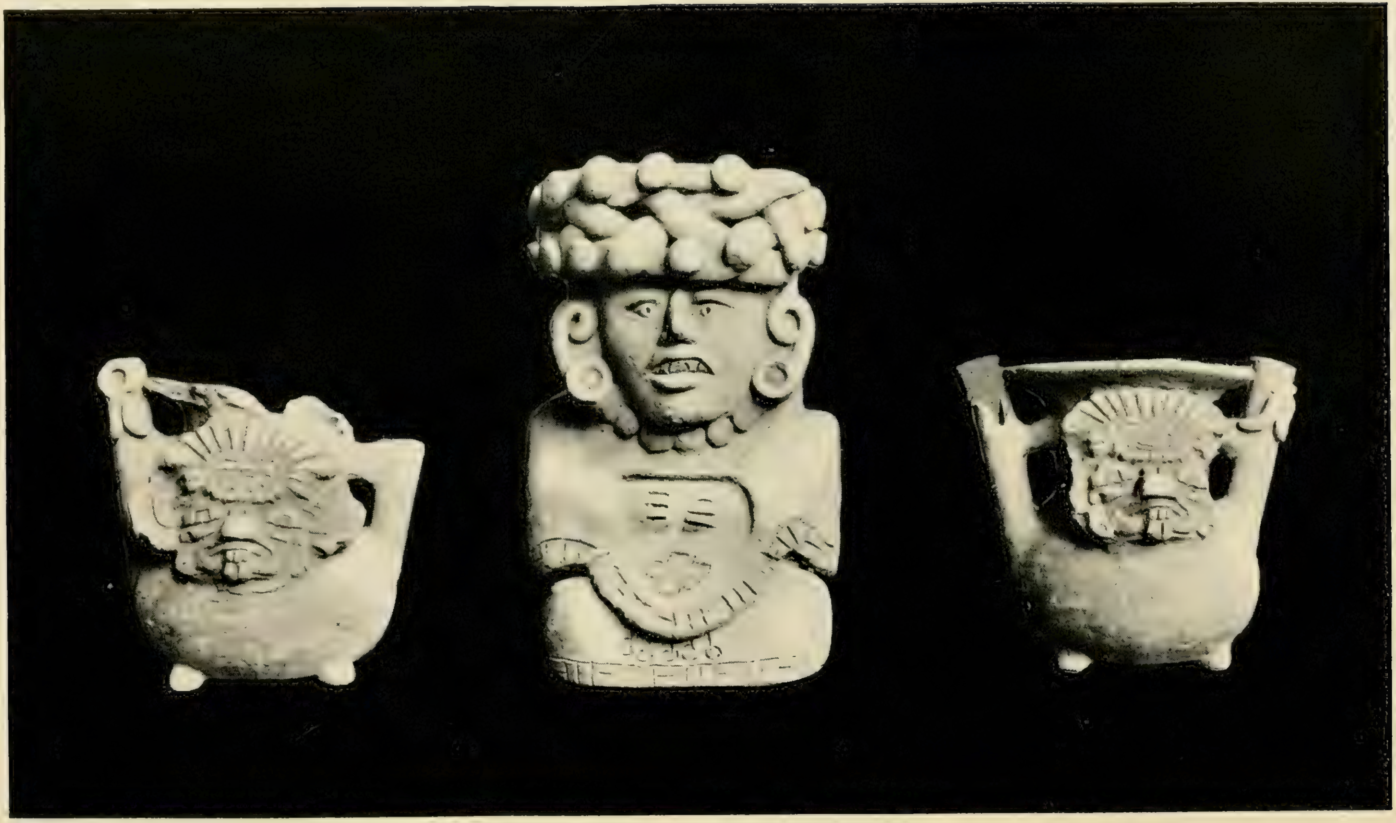
[a] Work cited, chap. 53.

[b] Historia de Yucatan, Devocionario de Nuestra Señora de Izmal, Valladolid, 1633, Ia. part 7, chap. 4.

[c] Compare lohuè, "plumas, las órdenes dellas que tienen lospapagallos en sí (feathers, the kinds thereof that parrots have on them)"; Lohuè-yáche, "las amarillas (the yellow)"; Lohuè-yàa, "las azules (the blue)"; Lohuè-naxiñaa, L. huijta, "las coloradas (the red)" (Juan de Córdova, Vocabulario).

[d] Decada III, book 3, chap. 18, p. 102.



POTTERY FROM A TOMB AT ZAACHILLA

design resembling a butterfly about the mouth, whose face, painted in many colors, looks out of the open jaws of a bird with a tall and erect crest. We succeeded in bringing home a complete specimen of this sort, which is now in the Royal Museum of Ethnology in Berlin, and a copy of this (front and side views) is given on plate XLII, reproduced by photographic process. The worship of this deity, who, in character is evidently identical with the idol of the Zapotec Teotitlan del valle, seems to have been remarkably widespread. Countless stone images of this deity, of whose bird's-head mask only the towering crest remained, have been found in the mountains of the slope toward the coast of the Gulf of Mexico, in those strips of territory which succumbed to the so-called Chichimec invasion, the expansion of the highland Nahua tribes. In the capital, Mexico, this deity was known under the name of Macuil-xochitl, "5 flower", and was regarded as the deity of luck in gaming.[a] He has a dark brother, to whom the name Ixtlilton, "the little blackface", was given in Mexico, and to him they turned for help when their children were ill. I have reproduced (in *c* and *d*, figure 67) the representations of these two deities as they are given in the Sahagun manuscript of the Biblioteca del Palacio. These pictures also show that there is left of the bird's-head mask only the erect feather crest, with a wing as an ornament or device to be worn on the back.

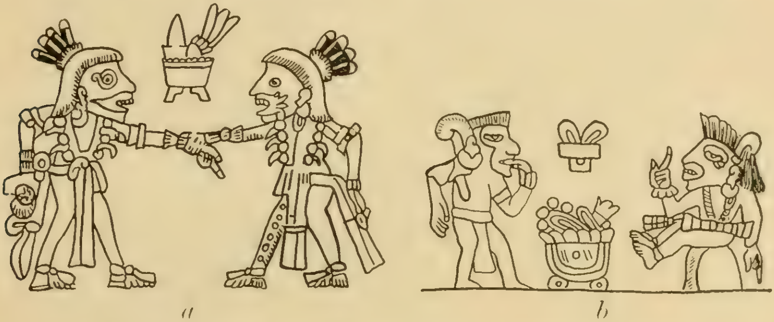


FIG. 68. Gods Macuil-xochitl and Ixtlilton, from Mexican codices.

A characteristic group, which evidently represents these same two deities, is found in the Fejérváry codex, page 21, the fourth in a set of six pairs of gods (*a*, figure 68). These two deities have a somewhat different form in the parallel passage of Codex Vaticanus B, page 58, which is reproduced in *b*, figure 68.

That the deity of the Zapotec Teotitlan del valle was considered by the Mexicans the same as their Macuil-xochitl appears to follow from the fact that in the immediate neighborhood of this place there was another place called Quije-quilli, "garland of flowers", by the Zapotecs, but by the Mexicans, Macuilxochic, "in Macuil-xochitl's village" (see the glyph, *b*, figure 67).

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[a] I have given more careful proof of this in my work Das Tonalamatl der Aubinschen Sammlung (Compte rendu 7ème Session du Congrès international des Américanistes, Berlin, 1888), p. 723 and following, and in my Altmexikanische Studien (Veröffentlichungen aus dem Königlichen Museum für Völkerkunde zu Berlin, Band I, Heft 4) pp. 162–164.

Nothing remains to-day of the magnificent buildings of the Zapotec Teotitlan del valle, but portions of the ancient buildings, stone mosaics with geometric designs of the fashion of those of Mitla and fragments of reliefs are here and there found embedded in the walls of houses and churches in Teotitlan, as well as in those of the neighboring Macuilxochic. Other pieces have already been placed in the Museo de Oaxaca. What relief fragments I have met with I have reproduced in figures 69 and 70, which are, of course, only sketches and make no pretensions to special accuracy. The fragments in *b* and *c*, figure 70, are now in the museum at Oaxaca; *b*, figure 69, was still to be seen in Macuilxochic when I was there, while *a*, figure 69, and *a*, figure 70, are embedded in the wall of the church of Teotitlan del valle. It is quite evident that the reliefs exhibit,

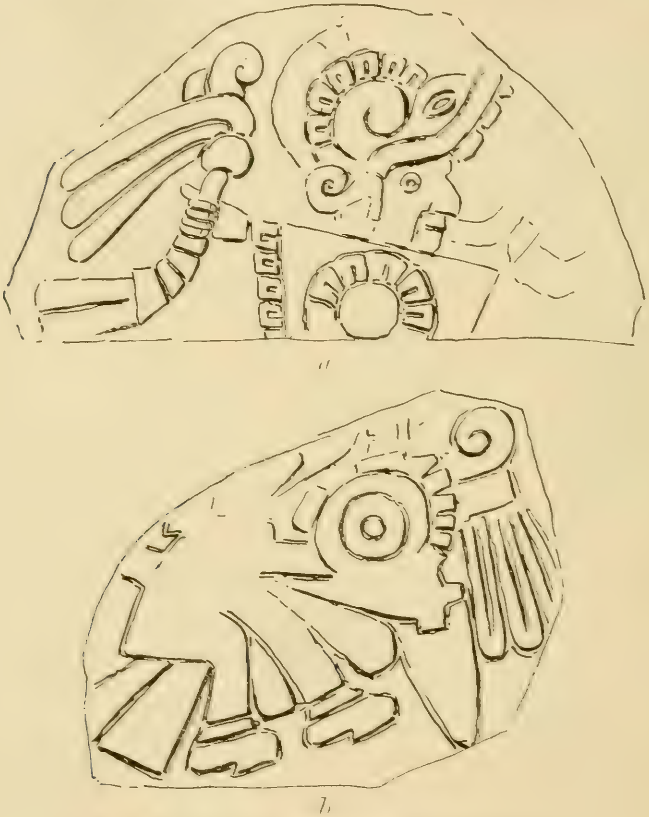

FIG. 69. Zapotec relief fragments from Teotitlan.

besides the jaguar, the special local deity, a man whose face is held by the jaws of a bird; that is, the god who came down from heaven in the form of a bird. A sharply defined feather crest on the top of the head is seen here, as in the pottery idols of the Macuil-

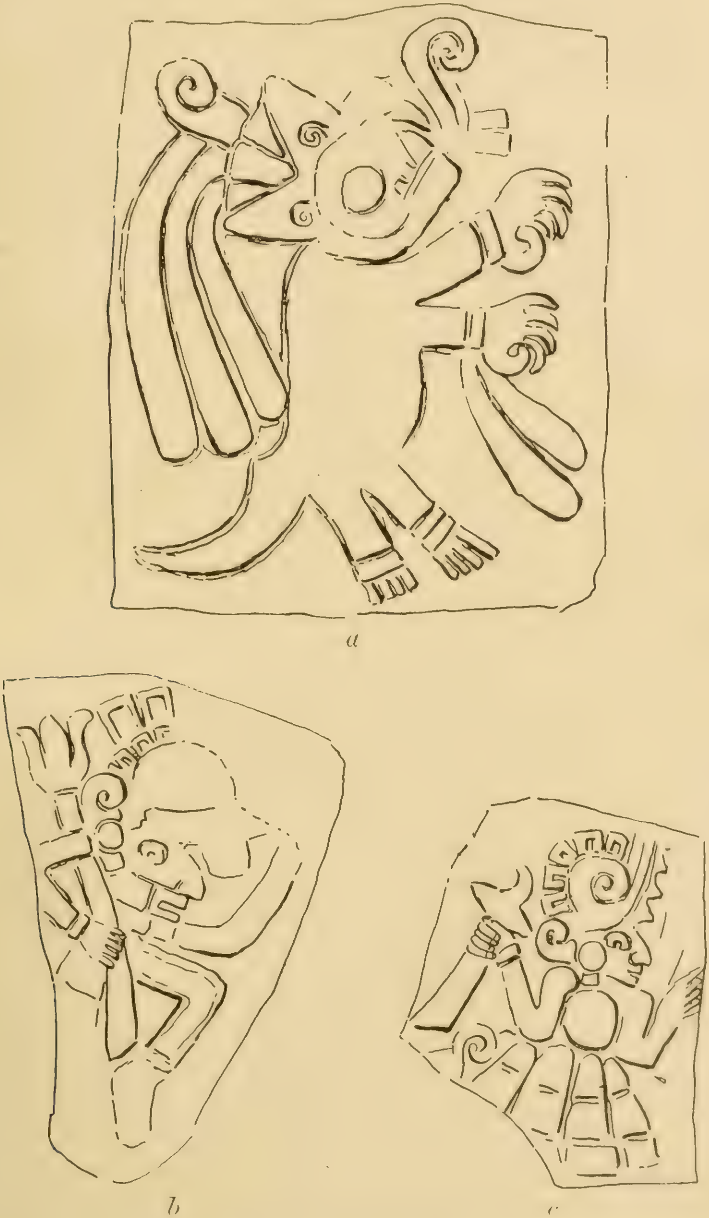

FIG. 70. Zapotec relief fragments from Teotitlan.

xochitl of Teotitlan del camino, and this again points to the identity of the deities worshiped in both cities.

As to the other conceptions of the sun held by the Zapotecs, Juan del Córdova mentions in his grammar[a] the remarkable impression which the eclipse of the sun made on the ancient Zapotecs. They feared nothing less than the end of the world, war of all against all, and murder on all sides; and since they had a notion that dwarfs were created at the bidding of the sun, when an event like the one above mentioned occurred they seized upon all dwarfed persons wherever found and sacrificed them, in this way paying their debt to the sun, as it were, by restoring that which belonged to it.

There is not much to be extracted from literature concerning the other deities worshipped by the Zapotecs. Besides the sun, the moon, certainly also some of the stars, received a certain sort of worship. Of the moon the Zapotecs believed, as did the Mexicans and other peoples, that the women stood in special relation to it. If there was an eclipse of the moon, they thought it indicated the death of the wives of the caciques and chieftains.[b] I have already spoken of the morning star and its relation to the wind god and the creative deities. Moreover, the Pleiades seem to have been especially regarded, and the Zapotecs called them Pizaana-Cache, the "seven boys".

The rain god, who, as I have already stated above, was called Cocijo by the Zapotecs, evidently had a special significance. Without doubt he was entirely similar in form and conception to the Mexican Tlaloc. Large stone images and small figures with the characteristic features of Tlaloc have been frequently found also in the Zapotec country; and, as I have stated above, children in particular were sacrificed to the rain god among both the Mexicans and the Zapotecs.

A god whom the dictionary calls Pitao-Cozobi, "god of the harvests" (dios de las mieses), appears to have stood in a certain relation to the rain god. Human sacrifices were also made to him, and the people sacrificed to him were called peni-nije, peni-quij-nije, or peni-cocijo.

A special ceremony relating to the increase of the fruits of the field was recorded from the village of Quiecolani. Father Burgoa relates[c] that at the time of harvesting in this village, which was famed throughout the province for the quantity, size, and superiority of its maize, the ear which was the largest, fullest, and most conspicuous for its beauty and the perfection of its kernels was selected, and this was honored with demonstrations of all kinds; "for they said

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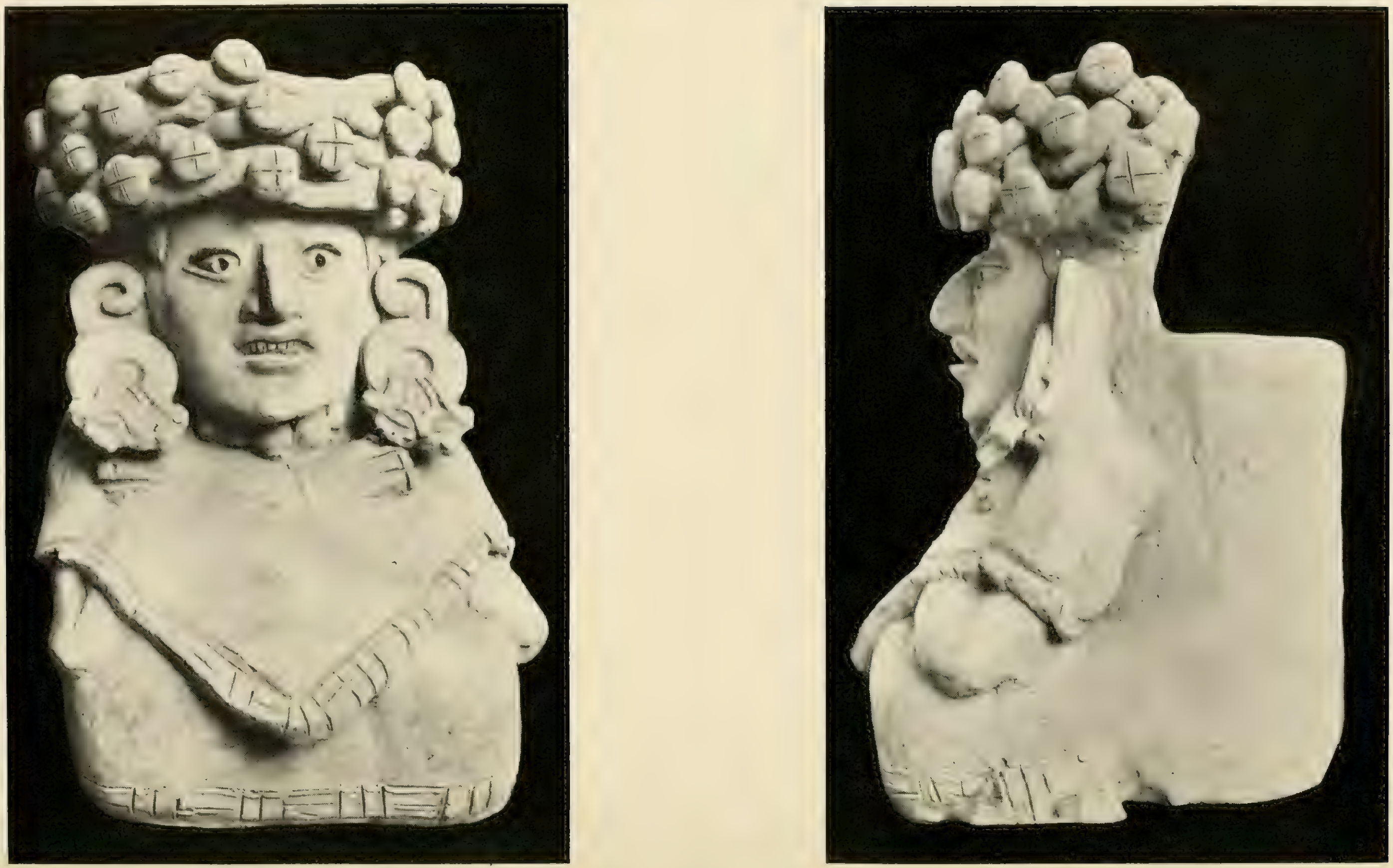
[a] Arte del idioma zapoteco, p. 215.

[b] Juan de Córdova. Arte, p. 215.

[c] Work cited, chap. 67.



POTTERY FROM A TOMB AT ZAACHILLA

that in it the god was present who had furnished them with everything besides, and, as the abode of the god, they, with much burning of incense, addressed worship and prayers to it while they placed it upright on an altar and honored it with songs and merry dances. They dressed it in clothes, which were made according to its measure, and hung upon it small green stones which were their jewels, and after they had offered it sacrifice it was rolled in a white cotton cloth and thus preserved. When the season for plowing the land and planting the seed returned they notified and summoned the priests, and the foremost men of the village assembled in the house where the gaily decked ear of maize was kept, and after repeating the heathenish ceremonies in its honor they begged its permission to carry it out to watch over the fields; and then a priest took it, rolled it in a clean deerskin which he had brought with him for this purpose, and they all went together to a place in the midst of their planted fields, where they had made for it of stones an ovenlike hole in the ground, and in this they placed it, with much burning of incense, and earnestly besought it to take under its gracious protection the seeds of these poor men who hoped for their means of subsistence at its hands, and they covered the place [with earth] so that they could see it from afar without anyone daring to approach. If the year was a fruitful one, they took it out with great solemnity at the harvesting of the crops, thanked it for the liberality with which it had given them food, and the ear of maize, which had become entirely moldy from the dampness, was divided among those present as a relic and a sacred object".

Pinopiaa, the goddess of the fruitful vega of Xalapa, above Tehuantepec, seems to have been a deity of the earth. The sanctuary of this goddess, whom later tradition declared to be a daughter of the Zapotec king Cocijo-eza who had been changed into stone after her death, was found on the summit of a small mountain, where, in the middle of a small plaza, were four stone slabs, so placed as to form a roof, and under them the idol of the goddess, a cone-shaped white stone. When the matter became known and the monks hunted down the priests and devotees of this goddess it was found that the belief was spread among the Christian Indians of Xalapa that St. Katharine of Sienna, who had her church in one of the quarters of Xalapa, was identical with the goddess Pinopiaa and that the special worship which was devoted to that saint was really meant for the daughter of King Cocijo-eza who was turned into stone after death.[a]

A number of other deities are mentioned in the dictionary of Father Juan de Córdova, with their functions, but without further particulars as to their position or importance in the system of worship. Thus was Coqui-Lao, the "lord of poultry"; Pitao-Peeze, Pitao-Quille, or Pitao-Yaxe, the god of merchants and the lord of wealth: Pitao-Zij, Pitao-Yaa, or Pitao-Tee, the god of poverty and misfortune; Pixee, or Pecàla (properly "sleep", "dream"), the god of desire (luxuria, el asmodeo, ò demonio que incita, como dicen, el dios de amor, "lust, Asmodeus, or the demon who entices, as they say, the god of love"): Pitao-Xicala, or Pecala, the god of dreams; Pitao-Piji, Peezi, or Pijze, the god of omens; and Pitao-Pezelao, the god of the underworld.

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[a] Burgoa, work cited, chap. 71.

Finally, we have an abundant and unsophisticated source of information, which ought to give us the key to the mythical conceptions of the Zapotecs, in the antiquities of the country, the images of stone and especially those of pottery, the large and small figures, the figure vessels, the pottery whistles and small pottery heads, found in great numbers in the country, which was once thickly populated and abounds in graves. In an earlier work[a] I have discussed in detail one of the principal types of these antiquities, the remarkable great figure vases, distinguished by gigantic head ornaments and a peculiarly conventionalized face, in which the most conspicuous features are puffings over the eyebrows and under the eyes and a serpent's jaw set into the human countenance. As to the form of the vessels, I refer to plate XXXVI, where three vessels from Mitla, now in the Museo Nacional de México, are reproduced. The vessel standing on the right side of the page shows the human face with the inserted serpent's jaw. I have represented other forms in my treatise referred to above. They were probably all burial vessels. I have selected two figures of the picture writings to explain the deity represented on these vessels. On pages 5, 30, and 33 of the Vienna codex a deity is represented who is painted in a dark color and, like Ixtlilton (see *c*, figure 67), wears a crest decorated with stone knives, and about this are wound a couple of serpents, while a serpent crawls out of his mouth. The deity is designated in each of the three passages by the day, "4 snake", and in one of them (page 30) he is accompanied by a dragon, which bears a sun disk on its back. Opposite him, as the companion figure, is the wind god Quetzalcoatl, who is designated by the day "9 wind" and accompanied by a kind of serpent with a dog's or a jaguar's head (*a*, figure 71). Identical with this figure of the deity "4 snake" is another (*b*, figure 71), which forms in the Borgian codex, page 14, one of the four deities who are evidently distributed according to the four points of the compass: Tlaloc, this god with the serpent in his mouth, Mix-

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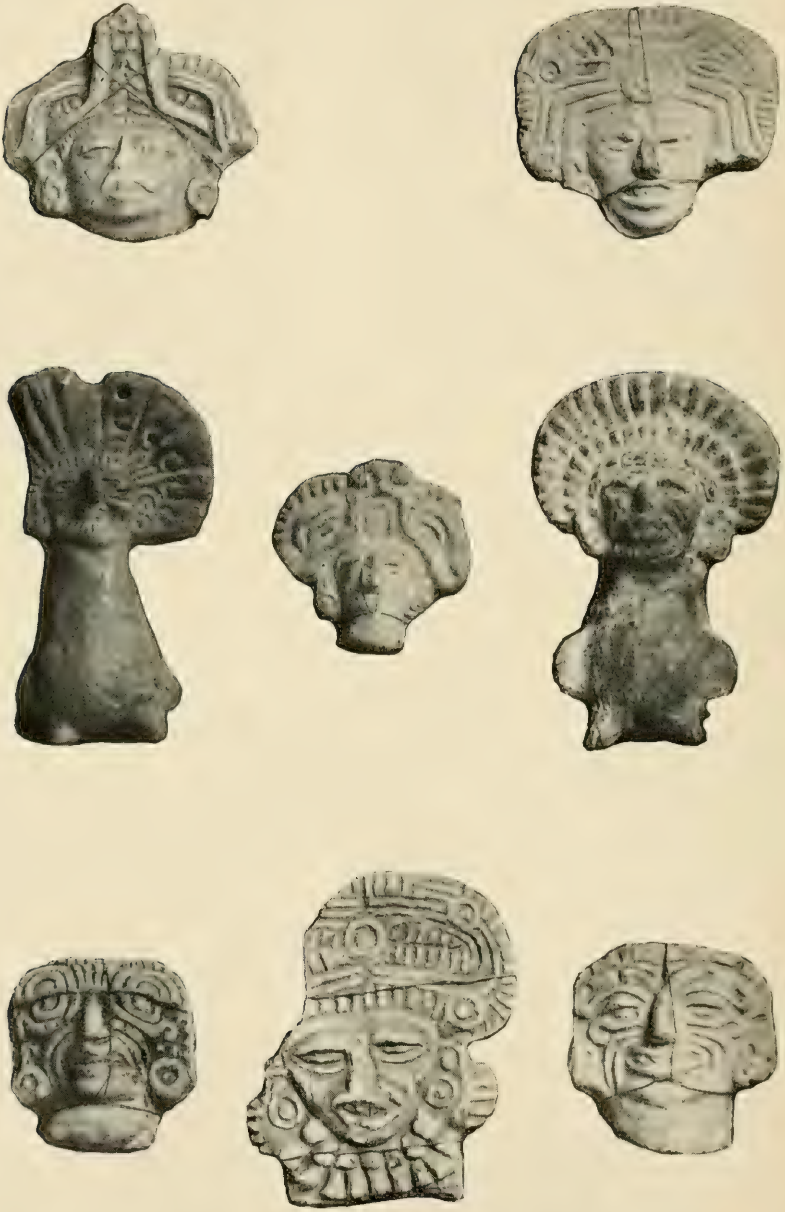
[a] Die sogenannten sakralen Gefässe der Zapoteken (Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, Bund I, Heft 4, pp. 182–188).



POTTERY FRAGMENTS FROM ZAACHILLA AND CUILAPA cuatl, and Xipe, who, it seems, are referred respectively to the east, north, south, and west quarters of the heavens. This god with the serpent in his mouth, *b*, appeared to me to have features like those exhibited by the representation in the same codex, of Tepeyollotl, the god of caves, of the interior of the earth (figure 66). He is doubtless a deity of the earth and related to the god Tepeyollotl. Hence the exceedingly frequent representations of this particular god on the burial vessels seem only natural.

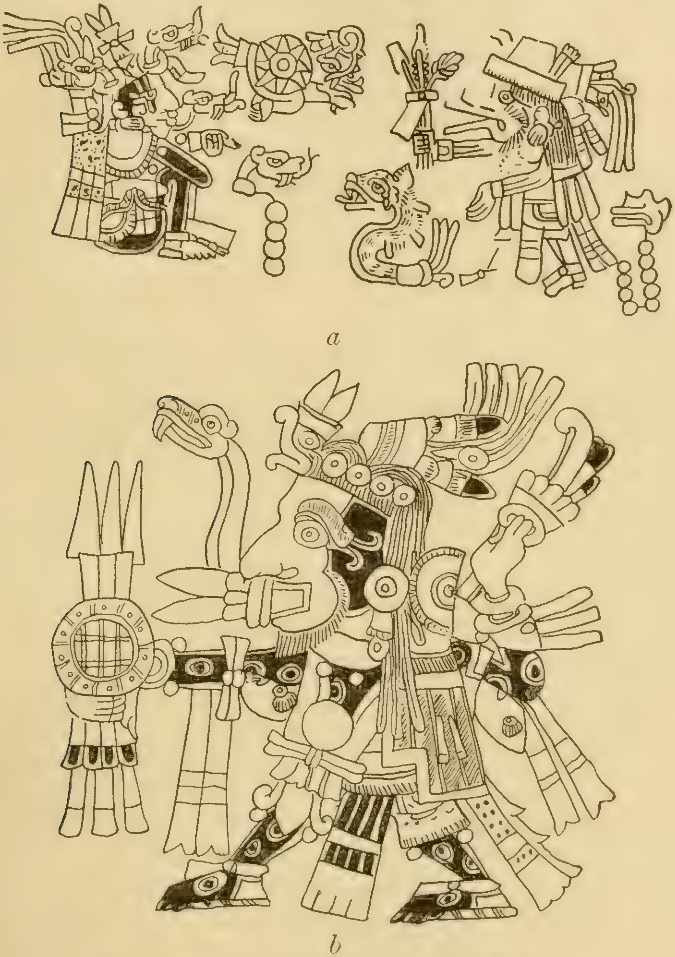


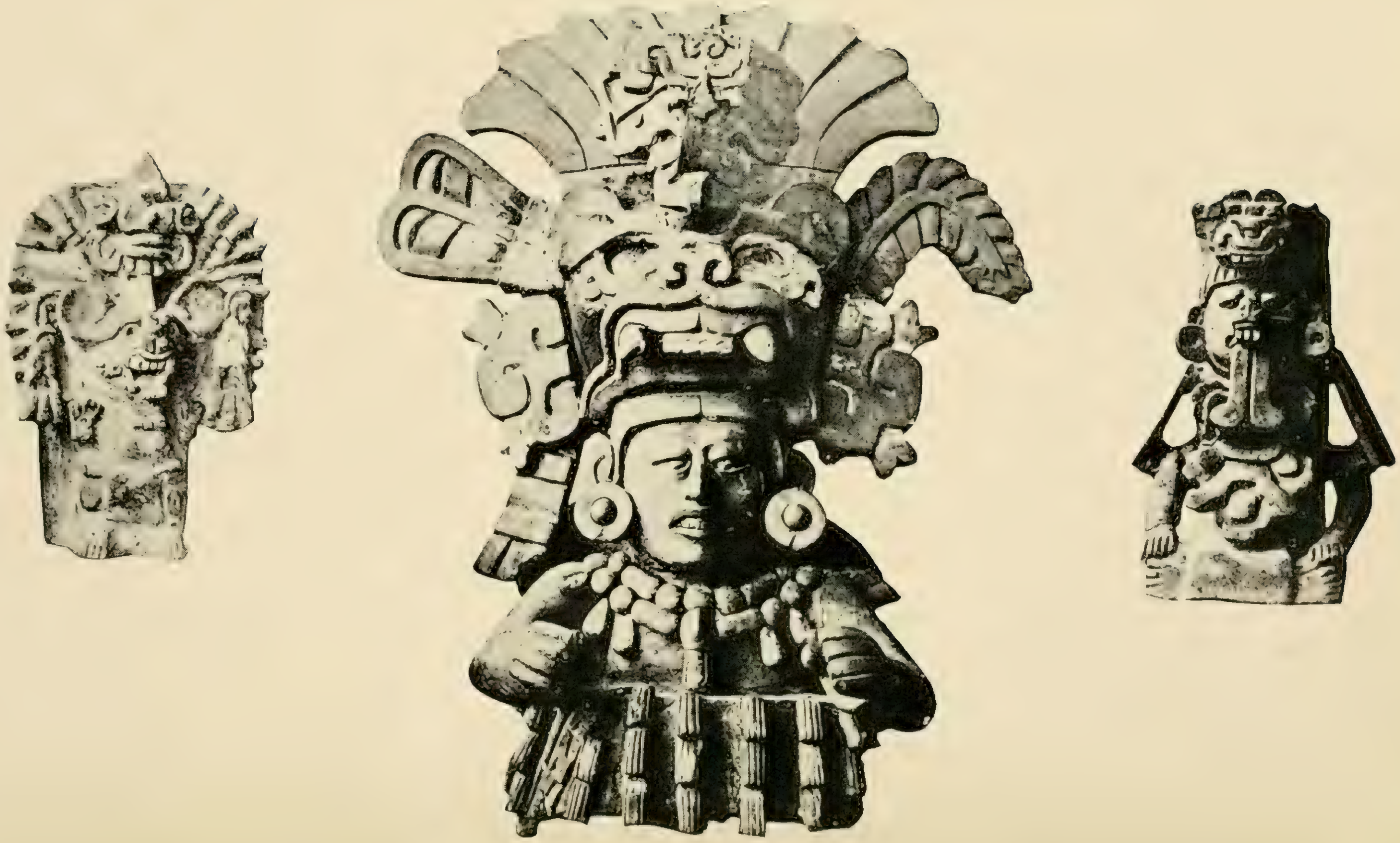
FIG. 71. Mexican deities, from the Vienna codex.

I believe we must also consider the various vessels and figures exhibiting a jaguar in the act of springing as connected with Tepeyollotl, who is represented in the calendars in the form of a jaguar (see the vessel on the left side of plate XXXVI).

Other figures and vessels evidently represent a female personage or a female deity. Thus the two beautiful figure vessels which are reproduced in the middle of plate XXXIII, and on plate XXXIV, which, together with the two others, with the serpent face, reproduced on plate XXXIII, and two plain, low, three-footed vessels, were found in a field in the neighborhood of the royal city of the Zapotecs, Zachila, or Teotzapotlan. We had the good fortune to be on the spot on the very day when this discovery was made, and were able to add these pieces to our collection, after some bargaining. They have passed with our whole collection into the possession of the Royal Museum of Ethnology at Berlin.

I have grouped together in plate XXXV some types of small pottery antiquities. We collected the originals partly in the neighborhood of Zachila and Cuilapa, partly in Mitla, and partly in Zoquitlan, above Totolapan. Some of the heads are the tops of bulbous clay whistles, which have two short feet in front, the mouthpiece of the whistle forming a third foot behind. Others are fragments of flat figures, evidently modeled in pottery molds. We know that the pottery whistles were frequently used, together with great whelk shells which served as trumpets and other musical instruments, at religious ceremonies, especially at the penitential exercises in honor of the rain god and other deities. They were very often, we may even say very generally, copies of the figure of a god. Those which come from the Valle de México very often have the form of the god of gaming, song, and dancing, but sometimes those of Xipe and others. Probably the small pottery figures were in the main small house idols, small images for votive offerings, and the like.

There are two principal types to be recognized among these Zapotec pottery heads and small pottery figures. First, male faces with deeply furrowed features, some with beards and some with projecting eye teeth, very often with a distinct halo. I believe these must be identified with the old god, the male part of the primal pair of gods. The other principal type is evidently that of a youthful female deity. There is generally to be recognized over the brow the transversely grooved palate and the two eyes of a reptile (alligator), out of whose open jaws looks the face of the goddess. These heads therefore doubtless represented the earth goddess who grants fertility and prosperity. Jaguar heads, or faces which wear a jaguar as a helmet mask, are seldom met with among these smaller pottery antiquities, and the face with the inserted serpent jaws, which is so frequent in the larger figure vessels, the mortuary vessels, seldom or never occur among them. We obtained, chiefly in Zoquitlan, torsos dressed in wadded armor, holding a shield in one hand and a club or a lance in the other; but similar ones are also found occasionally among the antiquities discovered in other places.



POTTERY FRAGMENTS FROM ZAACHILLA AND CUILAPA

One reflection in particular is forced on us while considering these antiquities peculiar to the Zapotec country. The types are very uniform and very characteristic, and in them can be recognized, strictly speaking, only the old creative god (fire god?), the earth goddess, Tepeyollotl, and perhaps a war god. Among the genuine Zapotec antiquities there is no trace to be found of the crowded Olympus of the picture writings and its very characteristic figures, particularly the forms of Quetzalcoatl, Tezcatlipoca, Xipe, and the rest, which we shall meet with again in the frieze of Mitla, while among the antiquities of the Valle de México and that portion of the highlands bordering upon it the characteristic form of Quetzalcoatl, at least, is often found. Hence the conclusion seems inevitable that the cosmogonic representations referring to Quetzalcoatl, explained more fully above, as well as the Olympus with its many personages which meets us in the picture writings and which we shall find again in the frieze of Mitla, were not properly national, did not have their roots in the Zapotec country, but represented a superimposed culture, which owes its origin to the influence of Nahua tribes dating back to prehistoric times.

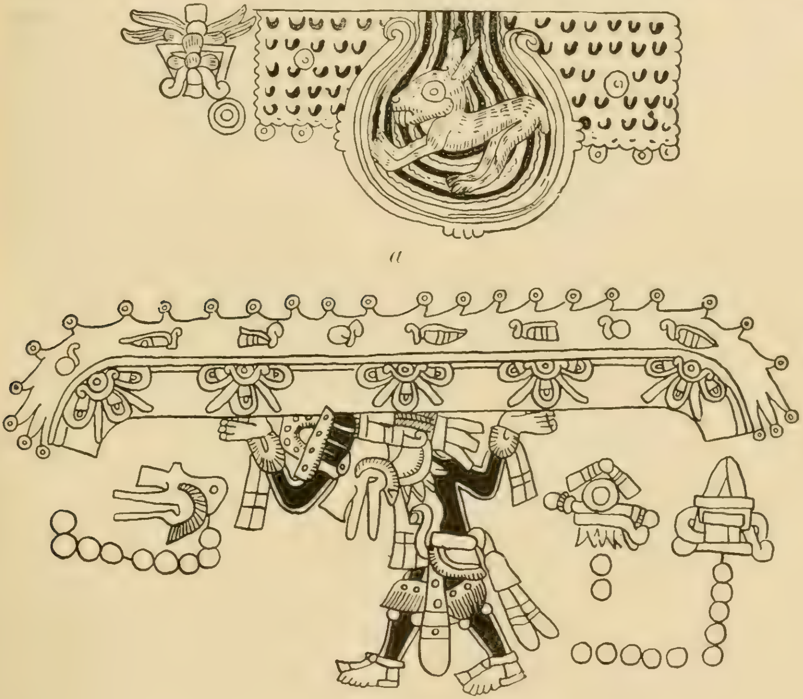
EXPLANATION OF THE WALL PAINTINGS

The fragments of painting reproduced in plates XXXVII to XXXIX are so arranged that each piece furnished with its special number represents a connected strip, and the transition from one number to another always means a gap in the painting caused by the destruction of the intervening part. It is apparent that only the upper parts of the frieze have been preserved. This is very much to be regretted, because the figures or groups on these friezes, as in the Vienna manuscript, were accompanied by dates, designations of years and days, which were certainly, as in the Vienna codex, doubly important, serving, on the one hand, as a connecting bond between the series of scenes represented by bringing them into a definite chronologic point of view, and, on the other, furnishing the names or designations of the personages represented. To be sure, an attempt has not yet been made to interpret and decipher all these dates in any of the manuscripts of this class. Any such interpretation, however, is made forever impossible for the paintings of Mitla, because the lower half of the frieze in which the dates stood or down into which they extended is entirely destroyed.

The bands grouped on plate XXXVII belong together in respect to their character, inasmuch as they all have for their upper and lateral border the "house of the sun", that is, a band which is formed by the regular repetition of the elements of the sun glyph, namely, eyes and rays. In fragment 1 these rays are stone knives, between which an eye surrounded by rays and eyes looks down, and in the other fragments human faces look down surrounded by rays consisting of figures resembling eyes.

The fragments 6 to 11 belong to the east side of the court adjoining Palace I. The others, however, all belong to Palace IV, fragment 1 to the east side and fragments 2 to 5 to the north side. It appears from this that the entire Palace IV must have been dedicated to the sun god. This supposition is confirmed by the fact that in the middle of the north side of this palace (fragment 5), in a conspicuously prominent place, there is a sun glyph, in the middle of which there was doubtless a representation of the sun god, but which has been cut away, intentionally, as it seems. The north side was the principal side in all the palaces. It lay along the principal axis, since the principal courts of all the palaces open toward the south, and the main building, with its adjoining court, lies on the north side of the chief court. Hence the sun glyph in the middle of this side in Palace IV must certainly be looked upon as the sign of the palace.

There is in fragment 1, besides pedunculate oculiform elements and the stone knives, which here represent the rays of the sun glyph, a design, already mentioned, which consists of an eye with an eyebrow rolled up at the ends, on which rest elongated (protruding) eyes, between which latter are inserted three pointed elements resembling rays. In the Mexican figurative symbolism eyes are very generally employed to express radiating light. Lustrous stones (emerald, turqouise, and muscovite) are expressed heiroglyphically by a disk that is marked differently according to the nature of the stone, and on its circumference are drawn four eyes placed in the form of a cross (see the hieroglyph chalchiuitl, " emerald ", in the pyramidal structure of the temple, *a*, figure 75). The stars shining down from the night sky are designated by eyes which are attached to the surface and to the rim of a stripe or half circle painted in a dark, nebulous color (see the representation of day and night in the middle design of figure 58 and the drawing of night with the symbol of the moon, a rabbit in a watery field, in figure 65 and *a*, figure 72).


a

b

FIG. 72. Symbols and figure of deities, from Mexican codices.

It seems, therefore, certain that the composite designs in fragment 1 are intended to represent radiating light. One is even tempted to ascribe to them a special meaning. If the eyes mean stars, this eye surounded by other radiating eyes might be intended to indicate an especially brilliant star; perhaps Citlalpol, the "great star", that is, the planet Venus. But the conjecture is contradicted by the fact that where the planet Venus is plainly expressed in the picture writings as an astronomic body it is designated by the date "1 reed"; as, for example, in the group in *a*, figure 72, the symbol of the morning star and the moon,[a] which, in the Borgian codex, page 44, is drawn beside the great picture of the sun god, and in *a*, figure 63, from the Codex Telleriano-Remensis, beside the deity of the morning star. The gleaming eye of fragment 1 is generally represented in a blue field, a clear sky, as in *b*, figure 72, and *a*, figure 73, from the Vienna codex, pages 47 and 48, and in similar pictures in the same codex, page 52, where the creative gods are seen enthroned in the clear blue sky. In the Borgian codex, pages 62 to 66, are found a number of complicated representations which refer to the deities of the four points of the compass and of the center, the fifth point of the compass, or the interior of the earth. Here the house of the sun, in the east, is designated by *c*, figure 74, in which the yellow-straw roof is seen to be provided with a cornice of flowers, while the house of the earth or of stone, in the north, is crowned with a row of stone knives, and the house of the owl, in the south, is formed entirely of human bones. Now, there are houses exactly like this house of the sun in the east on certain pages of the Borgian codex, *a* and *b*, figure 75, and in one of these is represented Quetzalcoatl, painted red, as the sun god, it would seem; in the other, his brother Xolotl, with the image of the sun on his back. Here, however, the roof, instead of being painted with the yellow color of straw, as in *c*, figure 74, has the clear sky painted upon it, stripes of many colors in which are drawn stone knives, eyes, and the eye surrounded by radiating eyes of fragment 1 of our plate, while (*b*, figure 75) the border is supported from below by female figures with death's-heads and jaguar claws, which are in all probability the Tzitzimime Ilhuicatzitzquique or Petlacotzitzquique, "the winged forms of the air who support the sky" (ángeles de aire sostenedores del cielo) or "holders of the reed mat" (tenedores del tapete de caña), mentioned by Tezozomoc.[b] In these pictures the palace of the sun is placed opposite another house, out of which tongues of flame curl high in the air and in which dwell dark forms of night. The roof is pointed like the cave temple, which, in the Borgian codex (figure 66) is represented opposite Tepeyollotl. It is probably intended to represent the house of the earth or stone.

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[a] The moon is represented here, as above in figure 65, by the picture of a rabbit in a vessel of water, the walls of which are formed of bones; that is, the bones of the dead. The ancient Mexicans recognized the form of a rabbit in our "man in the moon", as did the ancient Hindoos. The story runs that originally the moon shone with a light equal to that of the sun; that on this account the gods threw a rabbit into its face and thus diminished its brilliancy to its present glow.

[b] Crónica Mexicana, chap. 38.

In the Vienna codex, page 38, in exactly the same way, a mountain

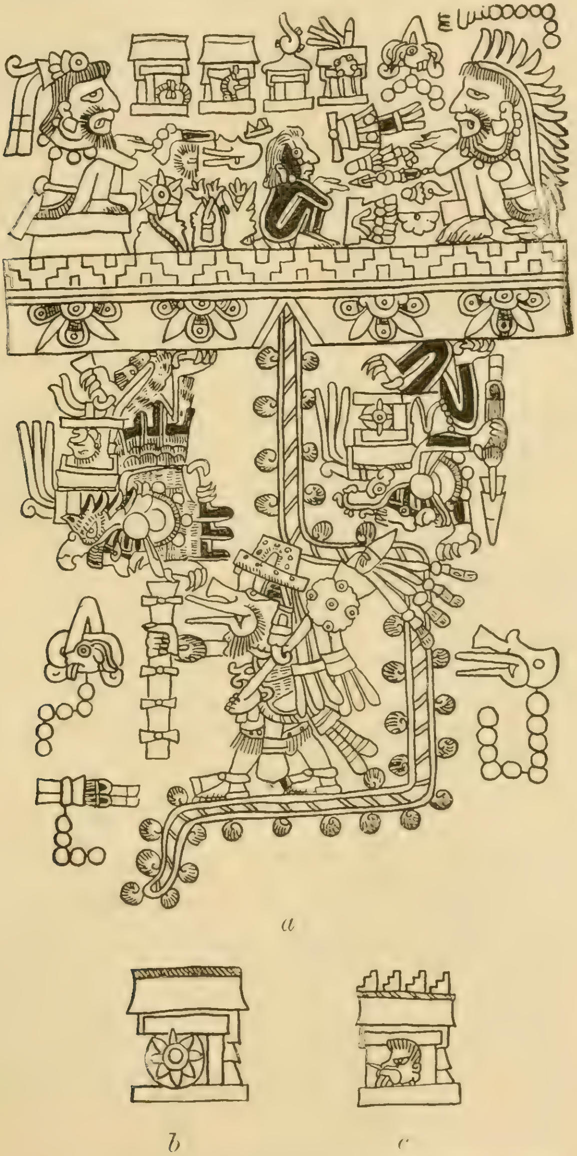

Fig. 73. Descent of Quetzalcoatl and house symbols, from the Vienna codex.

(painted green, as usual), with the radiating eye on its surface, is placed opposite another mountain, painted brown and black, the color of stone, out of which rise tongues of fire (*b*, figure 74). In the Vienna codex is found also a representation where the radiating eye is enthroned in a house of its own (figure 76). This palace of the radiating eye is represented on a mountain, on whose surface is indicated a blossoming tree, and opposite is seen, clothed in eagle array, the deity "9 rolling ball". We have already seen this same deity in the remarkable representation in figure 73, where, clothed in eagle array, he and a god with an alligator mask, together with the descending Quetzalcoatl, are bringing down from the heavens the houses of the day and the night. Night is here represented (see *b*, figure 73) by a head with closed eyes. This representa-

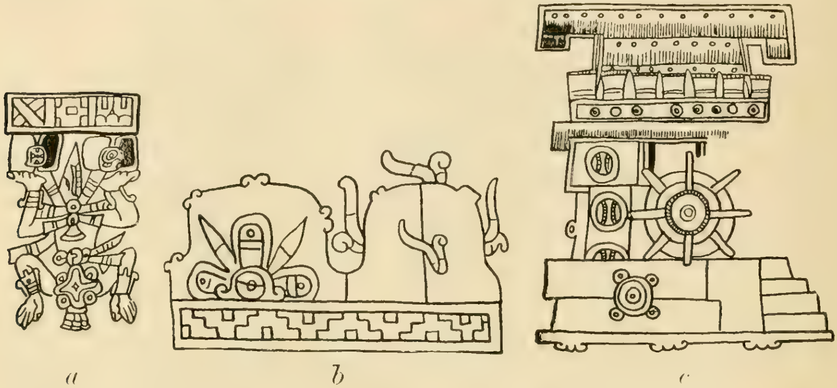

FIG. 74. Venus symbol and figures of mountains and house, from Maya and Mexican codices.

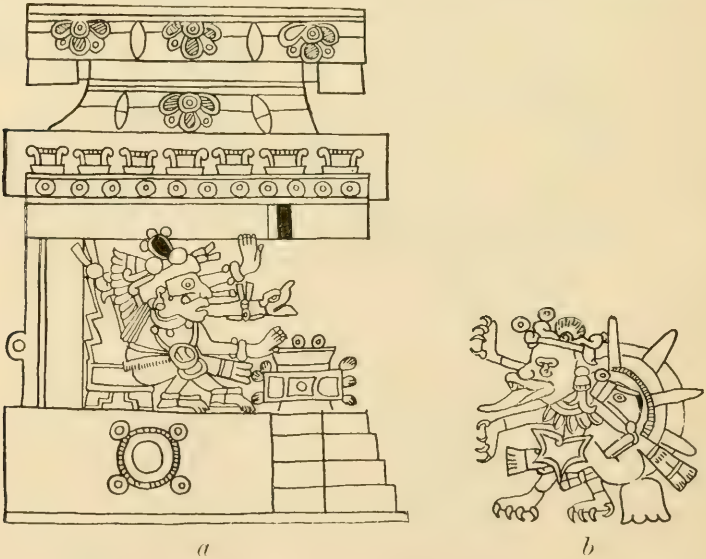

FIG. 75. Temple and sun symbol, from the Borgian codex.

tion is one which can unquestionably be compared with the representations of day and night among the so-called celestial shields of the Maya manuscripts, and it proves that I was entirely in the right when I pronounced this sign of the night in the Maya manuscripts, which is at the same time the hieroglyph for the numeral 20, to be a head with empty, bleeding eye sockets.[a] The entire picture in figure 73 appears to be a remarkable parallel to *a*, figure 74, from the Dresden manuscript, which was interpreted by Förstemann as the descent of Venus.

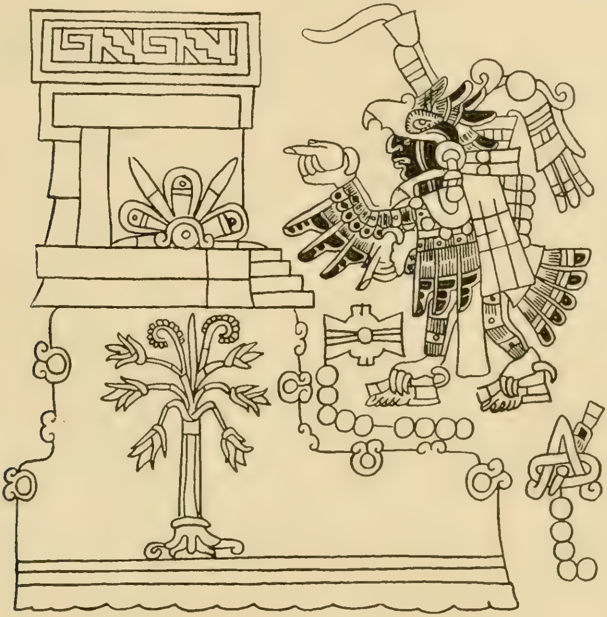

FIG. 76. Mexican deity, from the Vienna codex.

I even feel inclined to recognize the original form of the Maya sign, which Förstemann regards as the hieroglyph of the planet Venus, in the object set with five eyes which is carried on the staff of the descending Quetzalcoatl. If that is the case there is so much the less reason for accepting the theory that the planet Venus was intended to be represented by the eye surrounded by radiating eyes in fragment 1. A summing up of the points demonstrated above proves beyond a doubt, I think, that the eye surrounded by radiating eyes is not a " star eye ", as I myself formerly designated it, but an eye of light, a " sun eye ", kin-ich, as the Mayas called it. Therefore, we may consider this eye of light of fragment 1 without hesitation as homologous to the faces surrounded by radiating eyes in the other fragments of plate XXXVII. For the notions " eye " and " face " are merged one in the other in the languages of Mexico and Central America.[a]

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[a] See Zeitschrift für Ethnologie, v. 19 (1887), pp. (237)–(246).

There is, besides, a representation in which a deity of this "eye of light" or "eye of rays" is presented to us directly. It is on that one of the famous relief slabs of Santa Lucia Cozumalhuapa which is now in the Royal Museum of Ethnology at Berlin, and I reproduce it here in figure 77 (after C. Habel, but with some corrections). Here is seen the deity hovering above, and before him, below, the dancer dressed in the attributes of the deity. The head of the deity is set, as it were, like an eye under a large eyebrow which is curled up at the ends, and on which rest three zigzag rays. The dancer wears in his hair ornament the eye set in an eyebrow with three upright points, and a similar eye is above him on the end of a separate staff. The other attributes, such as the jaguar's skin which hangs down from the back of the dancer, the point of the spear, which is seen behind, and the jaguar's head, which he wears as a hand mask and as a decoration on his belt, show that we have before us the deity of a burning star, of the sun itself.

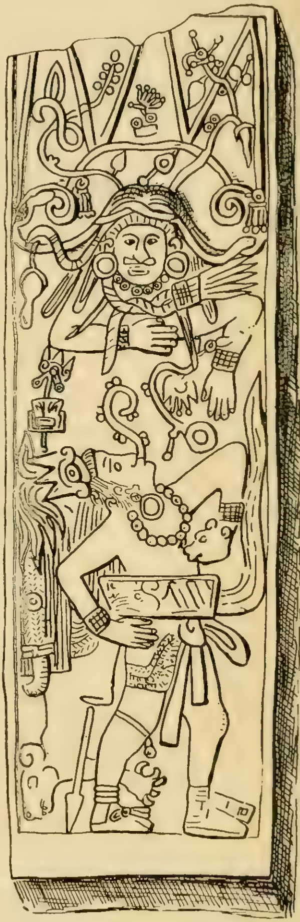

FIG. 77. Sculptured slab, Santa Lucia Cozumalhuapa, Guatemala.

No part of the representations which were below the border of clear sky is preserved on the east side of Palace IV (fragment 1, plate XXXVII). On the north side can be seen the head of Xipe[b] near the western end (fragment 2, plate XXXVII). The god is recognized by the narrow eye, the forked nose ornament, and the broad red stripe, of the width of the eye, that passes down the whole length of the face, which seems to connect this deity, much worshiped in the Atlantic Sierra Madre and the coast lands lying before

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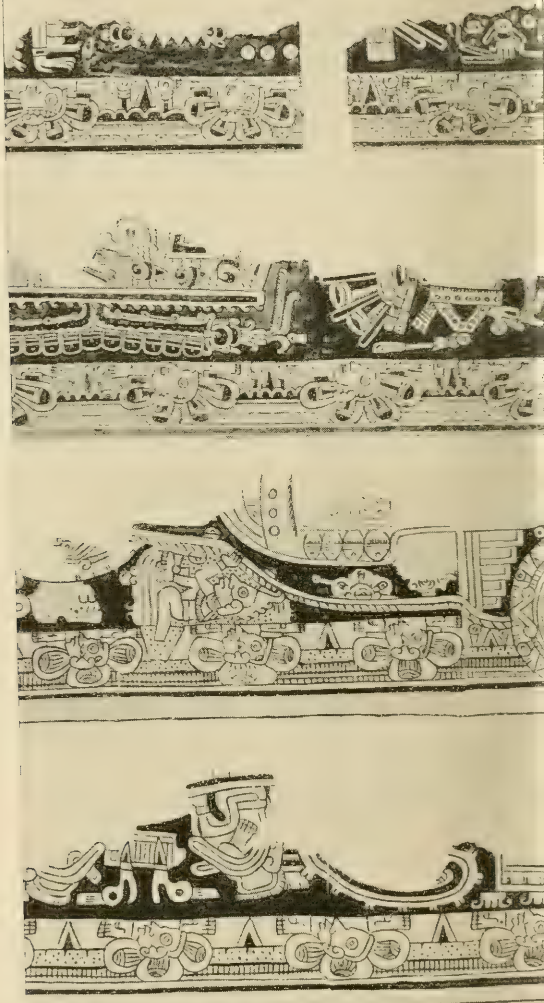
[a] Compare Mexican: ixtli, "la haz ò la cara (the front or the face)"; ix-telolotli, "ojo (eye)"; Zapotec: lào, lòo, piàhui-lào-ni, "haz por el rostro ò cara del hombre (front to the beak or face of a man)"; lào, pizàa-lào, "ojo con que vemos, ó ojos (eye with which we see, or eyes)"; Maya: ich, "cara, ojos, vista, semblante, haz, anverso (face, eyes, aspect, appearance, front, obverse)".

[b] See, concerning this god, Tonalamatl der Aubinschen Sammlung, work cited, pp. 657–675, and Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, pt. 4, pp. 145, 146 (illustration, fig. 13, p. 151).



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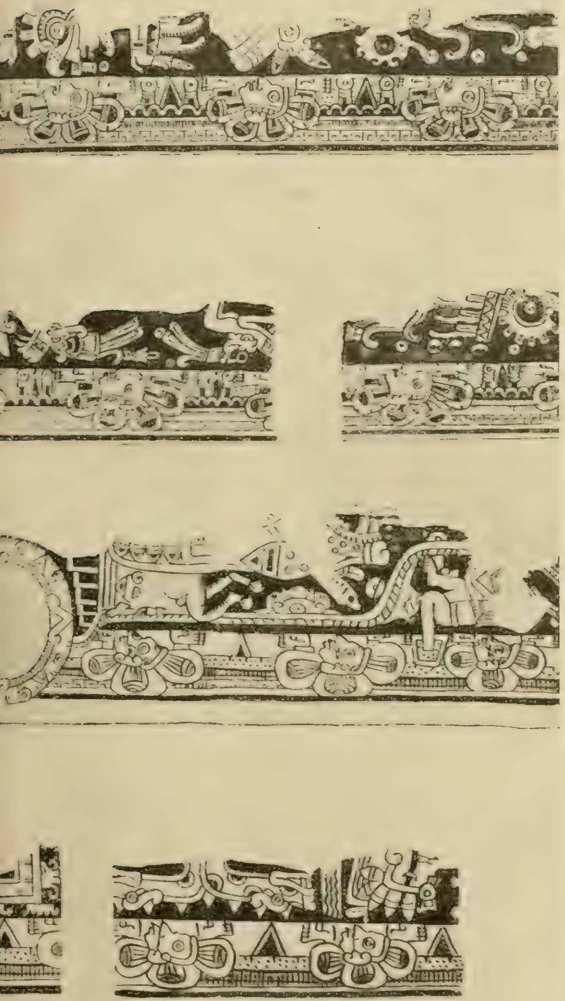

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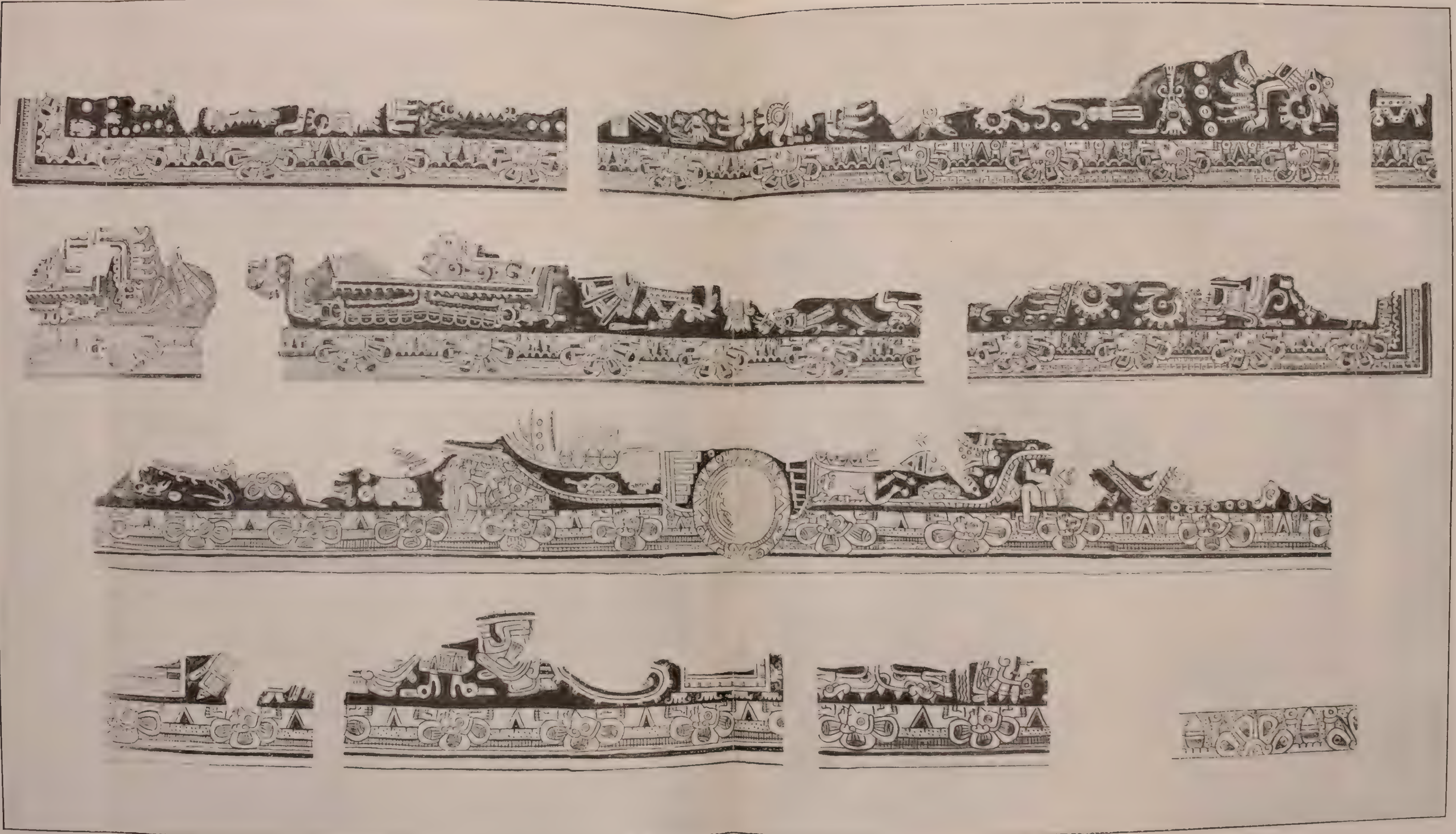

WALL PAINTINGS AT MITLA

INVERTED.

it, with a well-known deity of the Maya manuscripts, a deity of war, fire, and death, who appears in the retinue of the death god. Xipe in our fragment does not appear directly as the "stone-knife god" (Iztapal totec, that is, Itz-tlapalli, or Tlapal-itztli, Totec), as, for example, in the Codex Telleriano-Remensis; but he wears a crown of stone knives, from which hangs a feather plume. Beside him, on the right, are visible the heads and bodies of two serpents, having a row of points along their backs.

In fragment 3 there can be recognized two persons sitting with their arms crossed over their breasts, evidently two penitents, for between them project two sharpened thigh bones, implements of self-castigation, which served to pierce the tongue, ears, or limbs in order to draw blood for sacrifice to the deity.

The remnants still preserved in fragment 4 will no longer permit of interpretation. In fragment 5, however, we still have on each side of the sun glyph a continuous representation. On the right and left, from the sun glyph, which is flanked by steplike structures, a cord is seen to proceed, which is set with eyes (stars) and the eyes of light or rays discussed in detail above. Figures falling from the sky border, wearing peculiar wigs, which rise to a crest and are curled like waves, grasp at these cords, to which cling, from below recumbent female forms with jaguar claws. These latter may perhaps be considered as homologous with the "ilhuica-tzitzquique" of *b*, figure 75. The incident seems intelligible. The sun is being drawn out of its cave. A legend descriptive of such an incident has, however, not yet been discovered.

It is difficult to interpret other remains of figures which can still be distinguished in fragment 5. On the left side of the fragment the head of a bird seems partially visible. Farther toward the middle, just on the left of the sun glyph, is the head of a jaguar. It seems as if this jaguar were intended to bear on its back the entire structure containing the image of the sun, for on the right of the sun glyph and equally distant from it there seems to hang down the tail of the jaguar. A scorpion, with one claw and upward-curling tail, is plainly visible at the right end of the fragment.

Fragments 6 to 11 on plate XXXVII, belonging to the east side of the court adjoining Palace I, are more carefully drawn and more delicately executed than the paintings of Palace IV. The bird forms with clearly marked crests are very interesting objects here. These appear on the left (northern) end of the picture (fragment 6) as complete birds; then half turned into men (fragment 10); finally, on the right (southern) end (fragment 11), the full human face looks out of the bird face, which is reduced to a helmet mask. These bird forms and bird men are evidently identical with the idol of Teotitlan del valle, whose form I was able to show in the reliefs reproduced above in figures 69 and 70. The fact that these figures occur in the representations of the east side of this court, in the house of the sun, is a proof of the correctness of my conjecture that this idol of Teotitlan is the sun bird, which conjecture I have already mentioned above and which was directly suggested by the name Teotitlan itself.

Besides the sun bird two figures of the wind god, Quetzalcoatl, strike us as significant on the east side of the court of Palace I, fragments 7 and 9 of plate XXXVII. They are recognizable from the ocelocopilli, the round, conical cap of jaguar skin, and from the winglike feather ornament on the nape of the neck, concerning which I shall speak farther on. In regard to the other remains of figures, various heads of serpents are still recognizable; at the right end of fragment 7 is a deity in a watery field, from the surface of which rise two divergent branches, bordered by what seem to be curling wreaths of smoke ending in bunches of flowers or feathers; and in fragment 8 is evidently another deity, a counterpart to the first one.

The whole of plate XXXVIII and fragments 1 to 5 of plate XXXIX are taken from the north, the principal, side of the side court of Palace I. The border here, as on the south side, is formed of simple disks. The underlying idea of this design is doubtless that of the stone disks (representing turquoise, emerald, or other precious stones), which we find expressed in the headbands, especially in that of the sun god, in the picture writings and stone figures.

The representations on this north side of the court are uncommonly rich and manifold, and it is only to be regretted that so large a portion of the paintings are already destroyed, and also that we do not know the particular form of the legends which are expressed in these paintings.

Undoubtedly the god Quetzalcoatl is the central figure of these legends. His picture can be recognized in the painted fragments on this side of the court no fewer than nine times (in fragments 3, 4A, 4B, and 5 of plate XXXVII and in fragments 1, 3, and 4 of plate XXXIX). I have spoken at length concerning the nature of this god and his attributes in my article on the Tonalamatl of the Aubin collection,[a] and in my translation of the chapter on the costumes of the gods of the Aztec Sahagun text.[b]

The god is represented in the painted fragments of Mitla, in every instance, with the ocelo-copilli on his head, the round conical cap of jaguar skin, in which are fixed the implements of castigation—on one side, the sharpened thigh bone, from whose condyle blood flows or a flower is pendent, and on the other side, the sharp, prickly point of an agave leaf. The round ends of the head knots, which are characteristic of Quetzalcoatl, for everything about the wind god is round or twisted in spirals, are to be found here and there. The "thorny, curved" ear decoration tzicoliuhqui nacochtli, plainly meant to look as if cut out of a snail shell, seen in the pictures of this god in the Borgian codex, Codex Vaticanus B, etc., is entirely lacking in our paintings, being replaced by a simple ear disk. The breast ornament of Quetzalcoatl, no less characteristic, and is evidently cut out of a whelk shell; which is called in the Aztec Sahagun text ecailacatz-cozcatl, "the spirally twisted wind ornament", is also lacking, but probably only because from the neck down the figures are altogether destroyed. On the other hand, in fragment 4B, plate XXXVII, it is outlined on the shield of the god. The fanlike or winglike feather ornament, standing out stiffly from the nape of the neck, which in the Aztec Sahagun text is once called cuezaluitoncatl, "fanlike ornament of red guacamayo feathers", and another time quetzal-coxol-tlamamalli, "dorsal ornament of quetzal and partridge feathers", is in our paintings always drawn like the pictures in the Borgian codex, Codex Vaticanus B, the Vienna codex, and the Mixtec Colombino codex (Dorenberg codex); that is, it consists of elongated, radiating feathers (in the picture writings painted entirely red or red with blue points), which are probably intended to represent the tail feathers of the red guacamayo ("macaw"), and objects between these which are either actual representations of eyes (see *a*, figure 78, from the Mixtec Colombino, or Dorenberg, codex) or surfaces ornamented with eyes more or less clearly expressed (see *b*, from the

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[a] Compte rendu VII. Session Congrès International des Américanistes, Berlin, 1888, pp. 545–559.

[b] Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, v. 1, pt. 4, pp. 126–129.

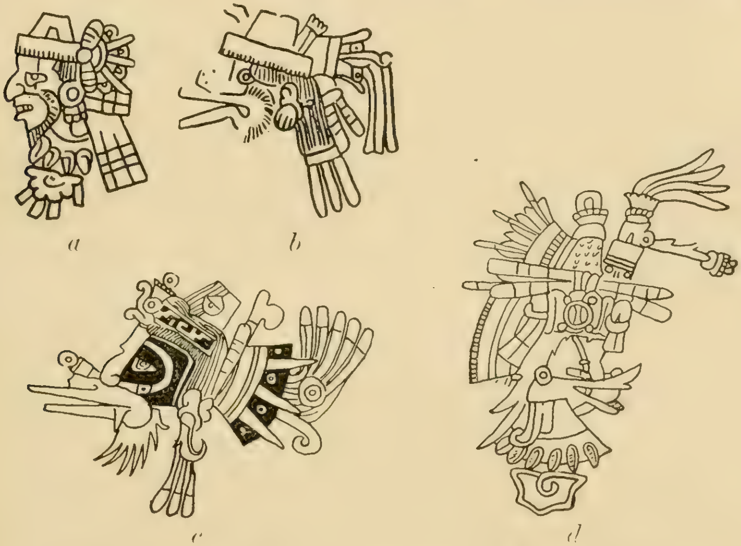

FIG. 78. Symbols and figures of Quetzalcoatl, from Mexican codices.

Vienna codex, page 30; *c*, from the Borgian codex, and *d*, from Codex Telleriano-Remensis, page 2). These intervening parts of the feather ornaments for the nape of the neck, especially in fragment 7 of plate XXXVII, are very much like the oculiform designs which surround radially the faces of light in the sky border.

Therefore this figure, as well as *a*, from the Colombino codex (Dorenberg codex), recalls very strikingly the eyes of light, or radial eyes, which I have already described in detail, and for this reason I believe that this feather ornament for the back of the neck, cuezal-uitoncatl is also intended to be a representation of the sun as well as that eye of light, or radial eye. Quetzalcoatl or a kindred form is portrayed in Codex Telleriano-Remensis II, page 25, rising from the jaws of the night monster, with the sun on his back, and in the picture from the Borgian codex reproduced in *b*, figure 75, is represented his brother Xolotl, with the sun disk on his back. The red guacamayo feathers have indeed already pointed to this connection; for the red guacamayo is the xilouela copijcha, as the Zapotecs called it, the cuezal-tonameyotl of the Mexican Sahagun text, that is, " the picture or the reflection of the sun". The picture of the sun god was decorated with the feather ornament, cuezal-tonameyotl, on the day Naui Ollin, "4 rolling ball", which was dedicated to the sun.[a] It is an important circumstance for the perfect understanding of these forms and, not less, for the knowledge of the province which was the home of this god or in which the people dwelt among whom this form of the wind god was worshipped that in the description of costumes in the Aztec Sahagun text Macuil Xochitl and Ixtlilton, the light and the dark brother, are likewise provided with an uitoncatl, otherwise called cuezal-uitoncatl. We recognized this light and dark brother in the idol of the Zapotec Xa quie, or Teotitlan del valle, as well as in that of Teotitlan del camino, situated near the boundary between the Nahua tribes and the Mazateca. In the capital, Mexico, the city of Uitzilopochtli, Quetzalcoatl had no festival, scarcely a place of worship, nor in the other cities of the Valle de México, with the single exception of Mizquic; but he had a sanctuary in Cholula, and from that point along the entire road over which the Toltecs, the wandering Nahua tribes, are said to have passed we find more or less evident traces of his worship until we reach Cozcatlan, inhabited by Mexican-speaking Pipils, in the present republic of San Salvador.[b] It was the Toltecs, or the Nahua race, " who were familiar with Mexican, although they did not speak it as perfectly as they use the language to-day ", whose lord and god was Quetzalcoatl. " Since they were quick of wit and apt in trade they succeeded in a short time in acquiring riches, and men said their god Quetzalcoatl gave them these, and so it was said among them of one who became rich rapidly that he was a son of Quetzalcoatl ".[a] The same authority [b] makes a similar statement concerning the Olmecs, Uixtotins, and Mixtecs—(under which name, as I stated above, are included different tribes of the tierra caliente, and probably also the Zapotecs), to wit, that likewise among these " there were many who spoke the Mexican language " (iniquein miequintin in navatlatoa). Doubtless the form of this god passed to the Zapotecs from the conquering and trading Nahua tribes, and perhaps the key to this frieze of Mitla, so abounding in figures, might have been found among the Nahua tribes, neighbors of the Zapotecs, in Teotitlan or in Teouacan (Tehuacan), full of idols and priests and productive of picture writings.

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[a] Sahagun, v. 4, chap. 2.

[b] Palacio. Relacion de Guatemala. Coleccion de Documentos inéditos del Archivo General de las Indias, v. 6 (1886), p. 26 and following.

The western part of the frieze on the north side in Palace I is pretty thoroughly destroyed. In consequence, fragment 1 on plate XXXVIII shows in general only disconnected remains. Two intertwined serpents, characterized by a row of points on the back, are quite distinct and recall those of fragment 2 on plate XXXVII. Furthermore there is a bird with a pointed beak, which appears again below on fragment 4B, plate XXXVIII. The numerals 1 and 2 are coordinated in the Borgian codex, page 44, with two bird forms which apparently correspond to this one of the pointed beak. Finally, there is preserved at the right end of fragment 1 a deity who wears a bar in the nose that diminishes in steps, like those by which the deities of the earth, Chantico and Xochiquetzal, are characterized in the Borgian codex. The elaborate painting of the face recalls also the Xochiquetzal of the Borgian codex, page 53.

In fragment 3 of plate XXXVIII are to be first noticed two pictures of the sun god. They can be recognized by the headband, which is set with disks representing precious stones and has a bird's head in front, and by two lines which border the outer corners of the eyes. The sun god in the Borgian codex, page 49, is represented opposite the moon god, as ruler of the sixth week, " 1 death ", in exactly the same way (see below, figure 82). The forward one of the two figures in fragment 3 appears to hold a cup in his hand, the other a disk or ball. Opposite the latter a god is portrayed who also wears the step-shaped, tapering nose bar of the earth goddess. To this god the day date seems to belong, which consists of the head of the rain god (quiauitl, " rain ") with a numeral which can no longer be identified. Behind the second figure of the sun god is given the year date " 7 (?) flint ". After this follows a representation difficult to interpret, in which can be recognized a mountain, with a finely drawn head of a turkey, and with a house (?) on its summit.

Fragment 4A begins with a serpent, which has the head of Quetzalcoatl and lies along the roof of a house. Then follows unmistakably the figure of Xolotl,[a] the twin brother of Quetzalcoatl, characterized by the physiognomy of an animal (dog?). He is adorned with Quetzalcoatl's conical cap of jaguar skin and his necklace of snail shells. The torn ears of a dog appear here almost in the shape of feather tufts.

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[a] Sahagun, v. 10, chap. 29, sec. 1.

[b] Ibid., sec. 10.

After Xolotl the drawing of a mountain, or town, with the hieroglyph "emerald" on its surface, and on its top a house, follows, and out of the roof of the house grows a blossoming tree. Then follow two human forms facing downward, which bear two mountains (towns) on their backs by means of the mecapal, a carrying strap passing over the forehead. The first is characterized by waving lines on its surface, in the middle of which are two mirrors. On its summit it bears the house with the blossoming trees. The other mountain has on its surface the hieroglyph "mirror" repeated three times, one above the other, and on its summit it has the head of a turkey.

In fragment 5 on plate XXXVIII, besides a couple of serpents' heads, there are visible an eagle and a jaguar, at least the splendidly executed claws of one.

In fragment 1, plate XXXIX, the picture of the death god is to be seen, whose face is painted like that of Tezcatlipoca, and who wears the stone knife as an ear peg and throws a lance with one hand.

In fragment 4, plate XXXIX, the year "1 reed", the name of the morning star, is given beside the picture of Quetzalcoatl. It seems therefore that here on the right (eastern) end of the frieze of the north side the transformation of Quetzalcoatl into the morning star was indicated.

The remains of the frieze on the west side of the court of Palace I are reproduced in fragments 6 to 9 on plate XXXIX. I was obliged to free the last of these from the masonry that had been built over them before I could copy them. The night, or the starry sky, is here represented as a surrounding border by means of eyes in a dotted (that is, dark) field.

On this side of the court are represented, not different deities, but different disguises of the same deity. The application of dark paint to the face around the eyes, like a domino, is the one essential characteristic in which this god coincides with the deity of the morning star, who, according to the interpreter's rendering, "is lord of the dawn, but also lord of the twilight when night is about to fall" (quiere dezir señor de mañana quando amaneçe, y lo mismo es señor de aquella claridad quando quiere anochecer). (See figures 62 and 63.) The same characteristic is, however, also an attribute of Camaxtli, who was the god of Tlaxcallan and was called god of the chase

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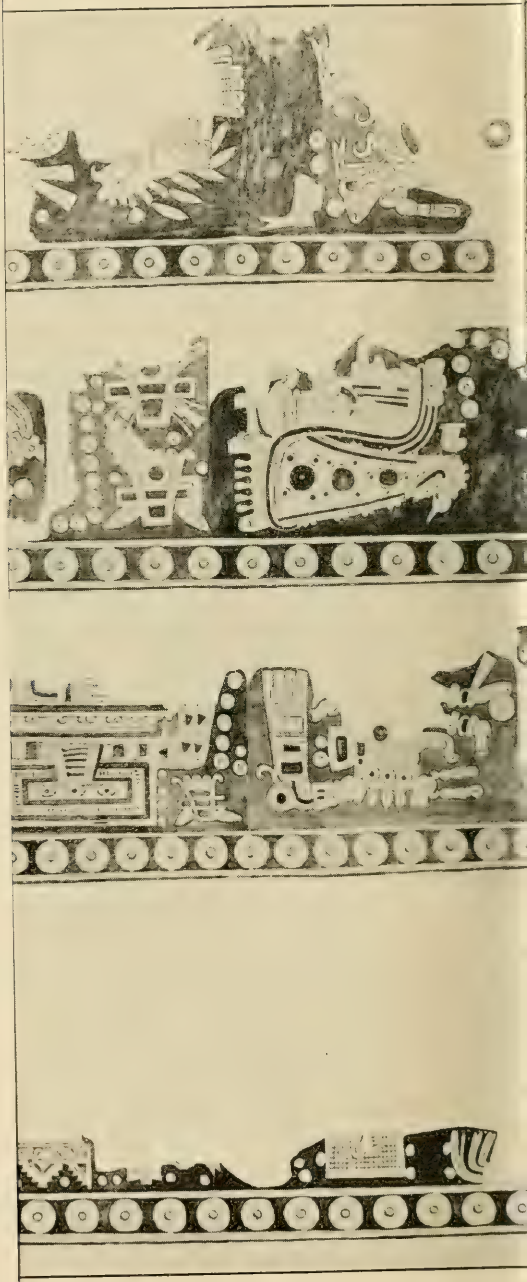
[a] See, concerning this god, Das Tonalamatl der Aubinschen Sammlung, p. 682 and following.



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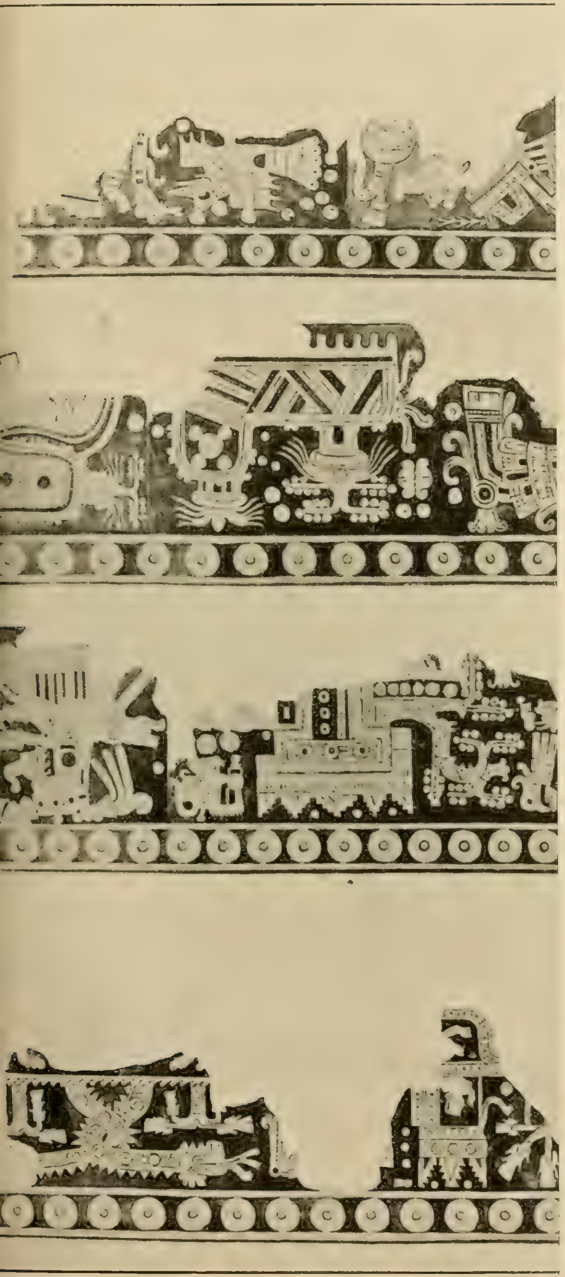

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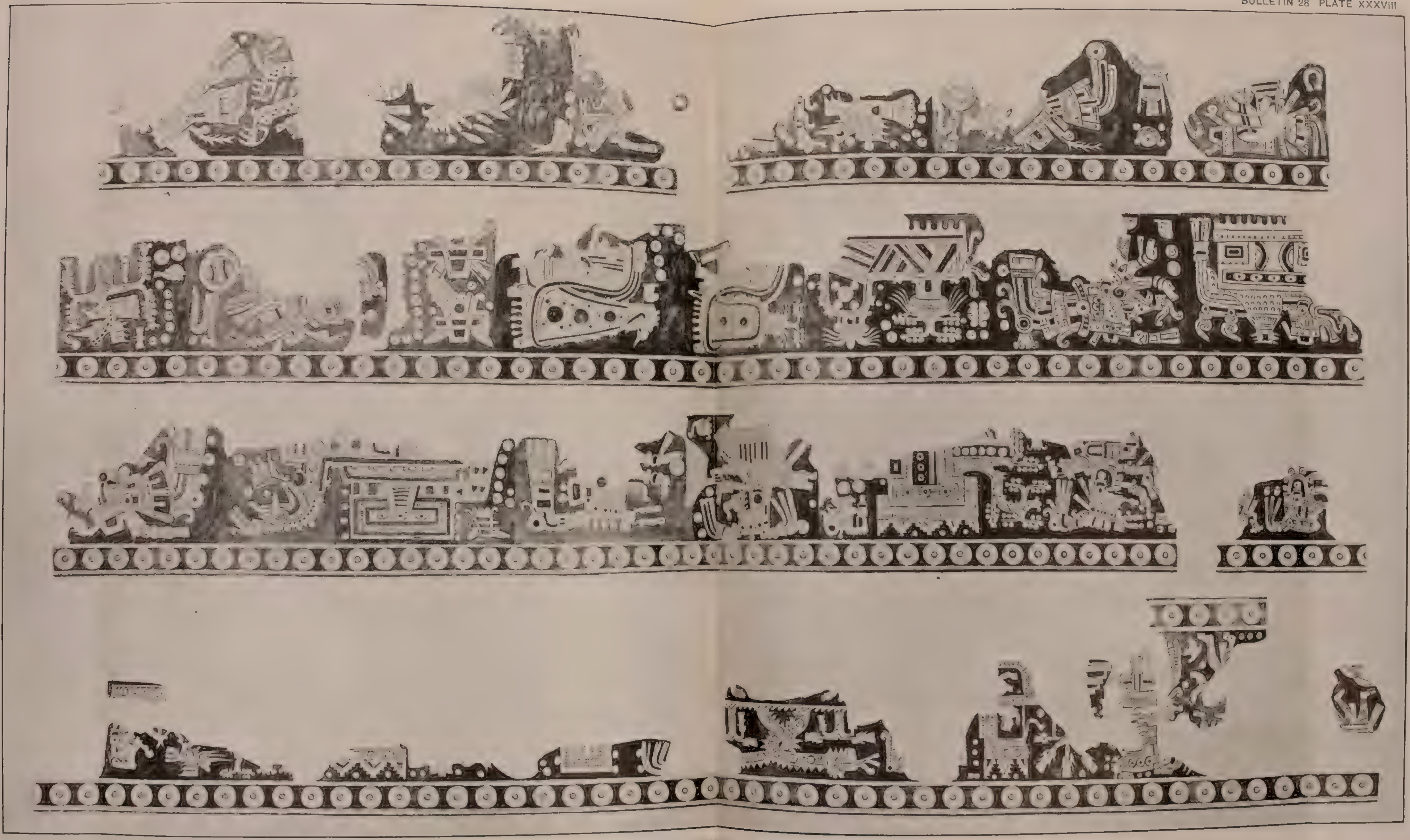

WALL PAINTINGS AT MITLA

INVERTED.

(*a*, figure 79, from Durán, volume 2, plate 6, a), and of Paynal and Atlaua as they are represented in the Aztec Sahagun manuscript of the Biblioteca del Palacio at Madrid (*b* and *c*, figure 79). It was also characteristic of Mixcoatl, who, like Camaxtli, was god of the chase, and in honor of whom the Mexicans celebrated the feast of Quecholli. A picture in the Sahagun manuscript of the Biblioteca del Palacio represents this feast, with the god and hunters wearing the costume of the god, who perform a dance or march in procession before him (*a*, figure 80). Finally, this characteristic is exhibited in exactly the same way in the Borgian codex, by the god who is being sacrificed on the ball ground on which the red and the black Tezcatlipoca are at play (*b*, figure 80). It is also one of the attributes of the Mimixcoua, the sorcerers, called Xiuhnel and Mimitzin, who, with their sister Quilaztli, were found by the migratory Aztecs in the north

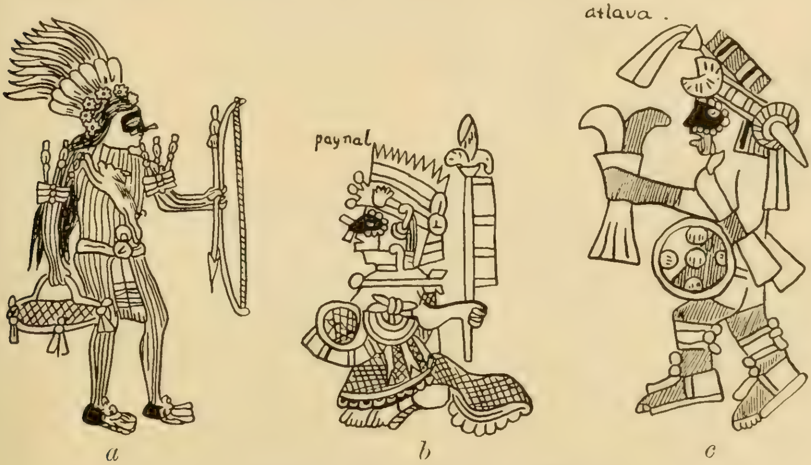

FIG. 79. Mexican deities, after Durán and Sahagun.

("the land of the Mimixcoua", Mimixcoua in tlalpan) below the mesquites and hanging on the melon thistle cacti, and who became their first tribute (yehuantin yacachto tequitizque), that is, they were the first whom they offered as sacrifices to their god (*a*, figure 81).[a] The characteristic is doubtless also indicated on the faces of the captives adorned for the sacrificio gladiatorio, by whom the conquest and subjugation of a city or country is regularly typified in the Codex Telleriano-Remensis (see above, figures 55 and 56).

It is obvious that this black painting about the eye is connected in most of these cases with the white or red and white striped painting of the body. It is fairly stereotyped as to form and extension; but a variation exists, inasmuch as in one of the manuscripts (Borgian codex) there is only a plain patch of black paint, while in the others (Codex Telleriano-Remensis, Tonalamatl of the Aubin collection, Sahagun manuscript) this black surface has a border of little circles. In the Aztec Sahagun manuscript, this painting of the face is designated as the "face-cage marking" and the "face-star marking which is called darkness (tlayoualli)". The expression "cage marking" refers, it would seem, to the stripes on the face. It is therefore evident that the technical designation "star marking, darkness" refers to the design resembling a black domino. This nomenclature not only explains the nature of the thing itself, but is also a proof that all the intricate and manifold symbols which we find as attributes of the personages of the Mexican Olympus were no thoughtless repetitions

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[a] Boturini codex, p. 9. The foremost prostrate figure, that is, the one lying farthest on the right, whom the Aztec designated by the hieroglyph Aztlan is sacrificing, is Quilaztli, that is, the earth goddess, recognizable by the black color about the mouth. Next follow her brothers, the Mimixcoua, the first designated hieroglyphically by the picture of a fish, mimitzin, the other by the hieroglyph "turquoise (mosaic)" and small individual pieces of turquoise, xiuhnel. The three are dressed as Chichimecs in skins.

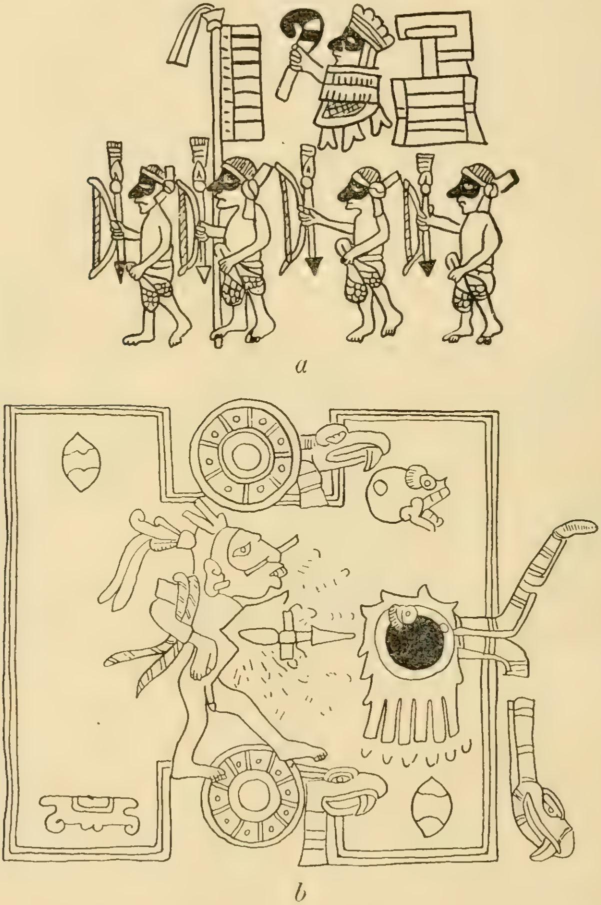

Fig. 80. Procession and sacrifice, from the Sahagun manuscript and the Borgian codex.

of adopted forms, but signs purposely employed to enable the beholder to recognize the nature of the personage represented without the possibility of error. In the case before us there has simply been drawn on the face of the deity the hieroglyph "night", as we have learned to know it in figure 65 and *a*, figure 72; and it follows from this signification and the designation given that the more complete and correct symbol was that which shows us the black surface bordered by small circles. These small circles are doubtless the eyes by which the Mexicans indicated the stars in the expanse of the dark nocturnal sky.

The deities on whose faces this hieroglyph was written have indeed a large number of traits in common, in spite of the fact that their entities are apparently very divergent. The interpreter has already laid stress upon the statement that the morning star is also the lord of the evening twilight, and thus belongs to the region of the west. This is, moreover, an astronomic fact. The Indians of the isthmus, according to Brasseur de Bourbourg,[a] up to this day call the morning star the "transient sun" (le soleil passant). The gods who were at home in the north, the region of darkness, were, from the Indian point of view, moreover, merged in these deities of the twilight, that is, the time when the sun was not yet or no longer shining; and, since in the north lived the roaming hunter tribes, the Chichimecs, the god of the north was naturally the god of the chase. The merging of the deity of the morning star in the hunting god of the north is actually carried out in the Tlauizcalpan Tecutli of the Tonalamatl of the Aubin collection, since the netted pouch (chitatli), the javelin, and the attendant animal of the god Camaxtli are placed in front of him (see *b*, figure 73). The north is, however, also the kingdom of the dead. Therefore, those who are destined for sacrifice, for

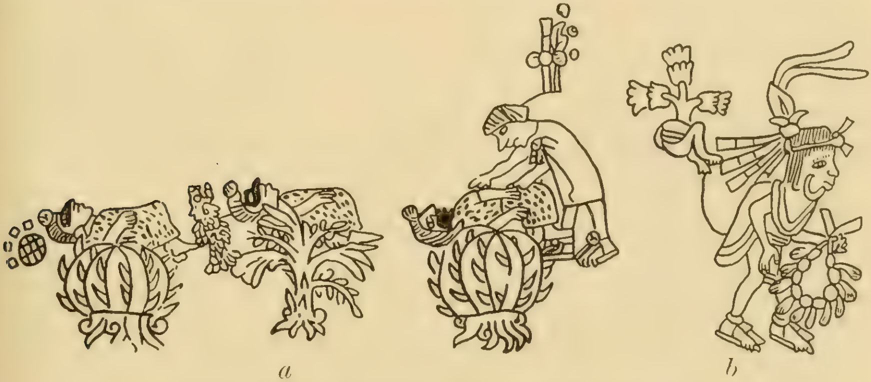

FIG. 81. Sacrifices and tribute-bearer, from Mexican codices.

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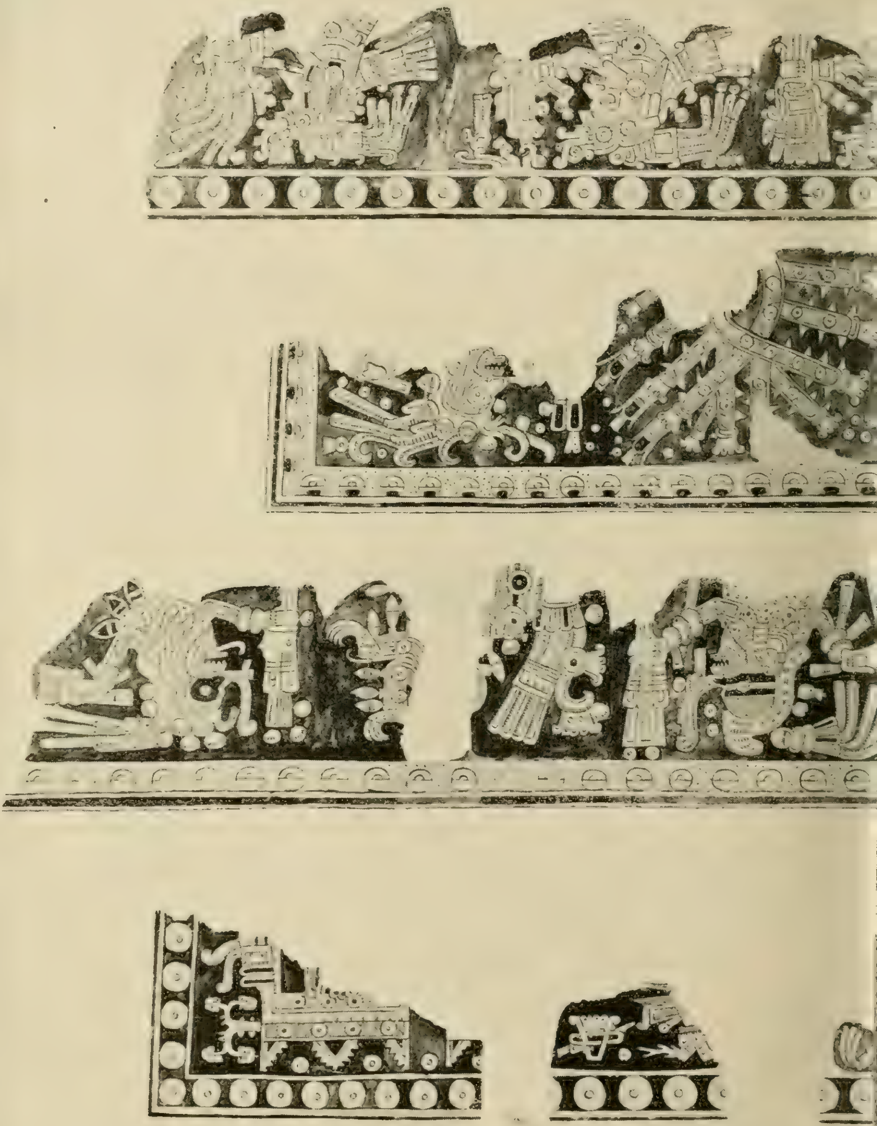
[a] Voyage sur l'Isthme de Tehuantepec. Paris, 1861, p. 81.

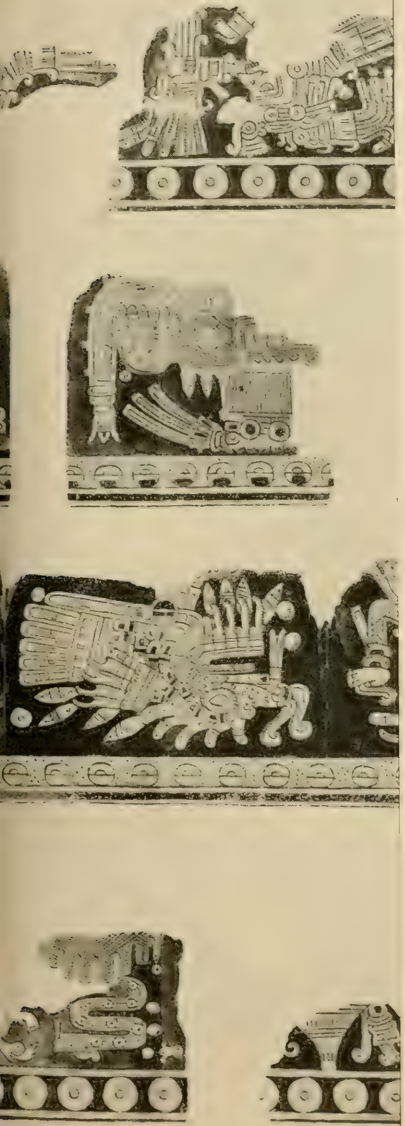
death, are naturally clothed in the livery of this god. Finally, the morning star, according to the interpreter, was also the first light which illuminated the world, before the sun was created. Hence this god is the primal deity, the creator of the world and of men, the Iztac Mixcoatl, who, as Motolinia reports, lived in the north, in Chicomoztoc, and from whom and his wife, Ilancueye, descended the different nations of the world, that is, of Mexico.

The deities of the evening twilight, who are represented on the west side of the court of Palace I (fragments 6 to 9 of plate XXXIX), have, almost all of them, a beard of the kind that is given to Quetzalcoatl, to the creative god Tonacatecutli, and occasionally also to the moon god, and several of the figures wear a tusklike curved peg in the under lip. The Mexicans called this tez-çaca-necuilli, and in the historical picture writings the warriors of Uexotzinco and Tlaxcallan are generally drawn with it (see *b*, figure 81). The style of dressing the hair and the adornment vary somewhat in other particulars, but one has the impression that these were mere calligraphic variants or different forms of the same deity. Each held a spear thrower in one hand and spears in the other. The gods are probably thus characterized as gods of war and of the chase.

As for the rest of the figures, we have, first, in fragment 6, on the left side, a deer facing downwards (recognizable by the hoofs) and clothed in a petticoat bordered with stone knives. Then comes an eagle, then a second form facing downwards which has the feet and claws of the jaguar; in fragment 7, a deer with two heads; in fragment 8, a figure difficult of interpretation, in which the petticoat bordered with stone knives occurs again; finally, in fragment 10, are intertwined blossoming branches set with thorns or points.

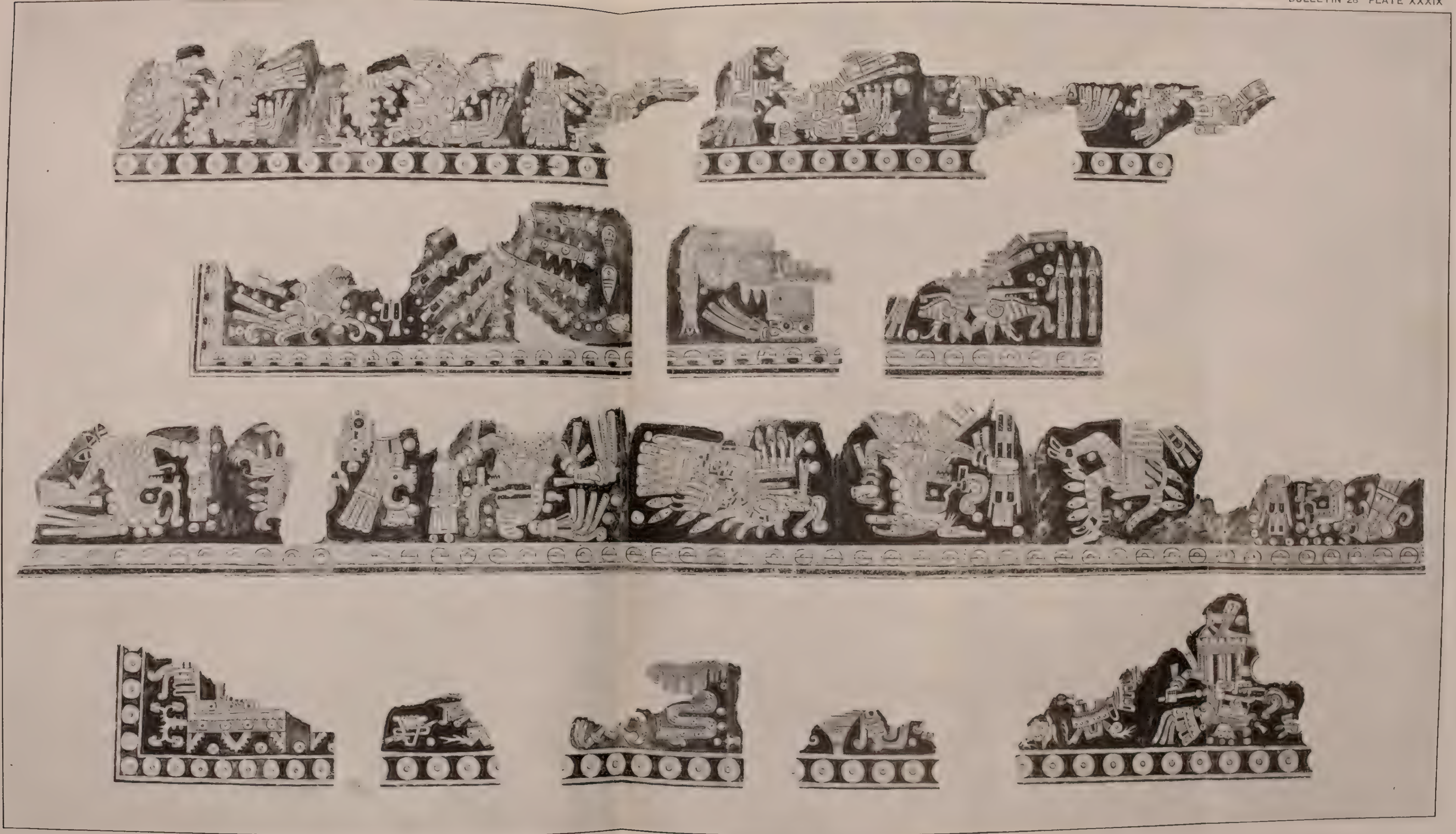
The south side of the court of Palace I, from which I have been able to copy fragment 10 of plate XXXIX, is the most uniform. The border, like that on the north side, consists of simple disks. The personages represented below the border are all different forms or calligraphic variants of the sun god. The characteristic features here are again the headband set with disks representing precious stones and bearing on the front a conventionalized bird's head and the lines around the outer corners of the eyes. The headband in all the figures without exception is almost exactly the same. The lines around the outer corners of the eyes of the third figure in fragment 10 are the only ones drawn in the characteristic manner to be seen in the picture of the sun god of the Borgian codex (figure 82) and also in fragment 3 of plate XXXVIII. The fourth personage has a broad rectangular latticework stripe. The others seem to have only a line of demarcation between the parts surrounding the eyes and the upper por-





WALL PAINTINGS AT MITLA

INVERTED.



WALL PAINTINGS AT MITLA

INVERTED.

tion of the forehead. In the last figure on the right, which differs from the other forms of this side of the court in having a round eye of death, the face is divided lengthwise by a broad stripe, which recalls the drawing of Xipe, into a light front half and a dark rear half. The latter is covered with concentric circles very much resembling the divisions in the face painting which are generally seen in the pictures of Quetzalcoatl. There is in this case also evident variation of form or of conception of the same deity. The way in which, on one single strip of wall painting, the same deity is represented with slight alterations, sometimes in different forms, and sometimes only in calligraphic variants, closely following one upon the other, recalls the calligraphic variants, or hieroglyphic elements repeated with slight alterations, which one so often meets with in the ornamentation and hieroglyphic writings of the Maya races.

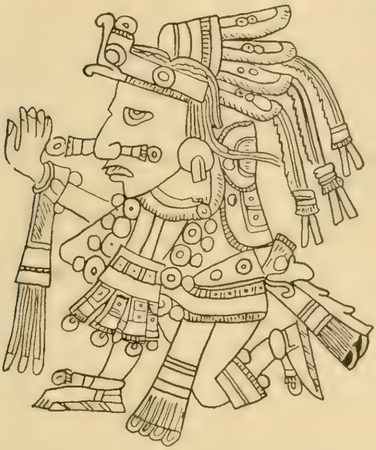


FIG. 82. The sun god, from the Borgian codex.

CONCLUSION

Defective and incomplete as they now are, these paintings of Mitla, taken as a whole, present an important document. They are, up to the present day, the only known picture writings of mythologic content, whose origin has been indisputably established, that date from ancient heathen times. Since these paintings show in the style of the figures and the subjects of the representations an unmistakable relationship to the Borgian codex, it follows that this large, beautifully and brilliantly executed, manuscript can not have originated far from the place where the designers of the frescoes of Mitla received their inspiration, their knowledge, and their skill in art. This place can not well have been the Zapotec country itself, for, while the deity, or the deities, who occupy the most prominent place in these picture writings, doubtless played an important part in the priest lore and the philosophy of the Zapotecs, it seems that, with the exception of the idol of Teotitlan, they were by no means true national forms. On the other hand, these picture writings contain a large number of elements which point to ideas and customs recorded precisely of the Zapotecs, but which are completely, or almost completely, lacking in the centers of political power belonging to the Nahua tribes of later times, as well as among the Mayas. It seems, therefore, that we ought not to seek the place which produced and spread this culture very far from the Zapotec country. I believe that these picture writings are tangible evidences pointing to the idea we ought to form of the Toltecs, whose name has been so often mentioned and so much abused, for they were neither mere mythical forms dwelling in a fantastic region beyond the clouds nor the inhabitants of a single small city, least of all an exotic civilized race that spread over the whole American continent, coming from the primal Asiatic home of man, lying somewhere near the biblical paradise. As Father Sahagun's authority emphatically declares, the Toltecs, or their descendants, spoke Nahuatl; yet they were not the Nahua tribes of the highlands, those who later obtained predominant political power, but the Nahua tribes who lived in the coast region as neighbors of the Mixtec-Zapotec and the Maya tribes, and who, in and by means of this contact, in active peaceful intercourse with the other tribes, developed the calendar and the philosophy connected with and emanating from it, which embraced their own deities and those of other tribes, a calendar and philosophy which afterward became, to a certain extent, the common property of all the civilized peoples of ancient Mexico.

SIGNIFICANCE OF THE MAYA CALENDAR IN HISTORIC CHRONOLOGY

BY

EDUARD SELER

SIGNIFICANCE OF THE MAYA CALENDAR IN HISTORIC CHRONOLOGY[a]

By Eduard Seler

In the traditions of the Mexican and Central American races there is mention of a civilized nation, said to have been in the country before all others, which was the originator of all arts and sciences. This was the Toltec nation. Among other things, the invention of the calendar is ascribed to this nation, and we are told that they carried their books with them on their migrations and that they were led by their wise men and soothsayers, the Amoxhuaque, " who understood the books ", that is, the picture writings. This is to some extent a confirmation of the statement that they were the inventors of all arts and sciences. For the calendar is indeed the alpha and omega of the Central American sacerdotal wisdom, and the great mass of Mexican and Maya manuscripts is nothing more than an elaboration of this calendric system in respect of its numerical theory, its chronology, and its system of divination.[b]

The nature of this calendar, consisting in the fact that it originated from the fundamental number 20 in combination with the number 13, is a well-known matter. A simple calculation shows us that the peculiar period of 52 years in use among the Mexican races proceeds directly from the application of this fundamental system to a solar year of 365 days. There is still a diversity of opinion as to how far the Mexicans themselves were able to harmonize this system with actual time, the solar year and the revolution, of the various heavenly bodies.

Among the Maya races the system seems to have been brought to perfection on the numeric-theoretic side in particular. This is shown by the long rows of figures rising to high amounts which Förstemann first brought to notice and deciphered. One thing seems to follow distinctly from these series of figures, namely, that not only the movement of the sun but also the movements of the large planets were noted, and that these people were capable of connecting the period of revolution of these bodies with the solar year of 365 days and with the period of 20×13 days, the true basis of the system. The apparent period of revolution of Venus may be set down with tolerable accuracy as 584 days. Five such revolutions give us the figures 2,920, or 8 solar years of 365 days. This precise number is plainly the basis of the computations on certain pages of the Dresden manuscript. But 65 such periods give us the number 37,960, that is, double the period of 52 years, which, as I said, is the direct result of the application of the designation of days in accordance with the system of the 20 characters and the 13 digits to the solar year of 365 days. In like manner, as Förstemann has also proved, the apparent revolution of Mercury around the sun, which is completed in 115 days, seems to be brought into connection-with the period of 20×13 days; for 104 of these revolutions produce the number 11,960, which is as well forty-six times the period of 20×13 days. And this number clearly forms the basis of other pages in the Dresden manuscript.[a]

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[a] Globus, v. 68, n. 3.

[b] See Zeitschrift für Ethnologie (1891), v. 23, p. 91.

Now, while this elaboration of the system is shown with tolerable clearness by the extensive computations continued throughout entire series of pages, we are still in doubt in regard to the cardinal question, whether the Mayas and Mexicans were capable of harmonizing this system, in which none but entire days are reckoned, with the actual duration of the year, which includes a fraction of a day; in other words, whether they were acquainted with intercalation, and how they managed it. It is evident that the solar year of 365 days necessarily caused a displacement of the beginning of the year, which must needs become very apparent within a comparatively short space of time. That this circumstance was not taken into account by the Mexicans, at least, within short periods of time, is proved by the displacement of the beginning of the year, which, as I have shown, actually occurred in the space from the conquest of the city of Mexico to the time when Father Sahagun wrote his history.[b] The Mayas were more systematic than the Mexicans in regard to chronologic dates, since they had in the first place longer periods, somewhat over 256 years, within which they could mark off 13 divisions with more precision. And furthermore, it seems to follow from both manuscripts and stone monuments that the Mayas possessed a normal date to which all present, past, and future events were referred, the days being simply reckoned from or up to this. This normal date, which Förstemann has also taught us to recognize, is 4 Ahau 8 Cumku, that is, the day designated by the figure 4 and the character Ahau, which was the eighth day of the month Cumku. Wherever in the manuscripts the dates of day and month are accurately indicated, the figures attached invariably refer to this normal date as the starting or ending point. The stelæ of Copan and Quirigua and the altar slabs of Palenque all have at the top a large glyph followed by a date, an ahau, the initial date or the name of a period of 20×360 days. And these large numerals invariably appear to give the difference between this date and the above-mentioned normal date. When such a distinct fixing of time occurs and when such weight is attached to it that the monuments erected at various periods, without exception, give this determination of the time first, we might well expect that these people were also capable of so ordering the calendar as to reduce the displacements resulting from the insufficient estimate of the length of the year; but hitherto, as I said, we have not succeeded in clearing this matter up.

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[a] Förstemann, Die Zeitperioden der Mayas, Globus, v. 63, n. 2.

[b] Die Bilderhandschriften Alex. von Humboldt, in der Königl. Bibliothek zu Berlin.

The so-called books of Chilam Balam are to be regarded as offshoots of the Maya manuscripts, most of them originating toward the end of the sixteenth and in the first half of the seventeenth centuries. They recite in the characters invented and taught by the monks all the old traditions still lingering in the memory of individuals. It is to be regretted that these valuable sources, which exist in various transcripts in Yucatan, were not published earlier. Copies of them were made by our indefatigable compatriot, Dr Hermann Behrendt, whose death was a great loss to science, and these copies were bought after his death by Doctor Brinton. I furnished various proofs in the last session but one of the Americanist Congress at Huelva that these books treat in general of matters similar to those given in at least a portion of the hieroglyphic Maya manuscripts, and that a considerable part of the old traditions is still to be found in their pages.

These books also contain the small amount of historic information regarding antiquity that is preserved by tradition. They have been brought together and published by Brinton in the first volume of his Library of Aboriginal American Literature, under the title, "Maya Chronicles". They are, in fact, brief chronicles, a recountal of the divisions of time, the periods called katun, which had elapsed since the immigration into the country and of the few memorable events which tradition has preserved. "This is the series of the katuns", "this is the enumeration of the katuns", "this is the account of the katuns", are the stereotyped forms with which the text of these chronicles begins.

The periods which are numbered, the katuns, are of considerable length. Their actual extent is still a matter of controversy. While the older Spanish authors, as Bishop Landa and Cogolludo, without exception ascribe to them 20 years, and this length of time also forms the basis of the computations which occur in the text of the books of Chilam Balam, the length of the katun is said to be 24 years in the marginal notes to that text, which, however, were evidently the work of some later hand. And the same thing has been affirmed recently by the Yucatec archeologist, Pio Perez, with great positiveness. I pointed out years ago[a] that from the way in which the katuns were named and reckoned, that is, designated by the character for the day Ahau and a numeral which seems to be decreased in each successive katun by the value of 2—as 13, 11, 9, 7, 5, 3, 1; 12, 10, 8, 6, 4, 2 Ahau—the conclusion is to be drawn that the length of the katun was neither 20 nor 24 solar years, but 20×360 days, a period of time actually used by the Mayas in reckoning, as clearly follows from the numeric characters in the Dresden manuscript with which Förstemann first acquainted us. It is merely a lack of exactness on the part of the old writers when they speak of 20 years instead of 20×360 days. The more recent theory that the length of the katun was 24 years clearly arose from the fact that the first days of the period of 24 years received the same designation as those of the periods of 7,200 days.

On the basis of a passage in the book of Chilam Balam of Mani, which gives the beginning of the katun, 5 Ahau, as the 17th day of the month Zac in the year 13 Kan, or A. D. 1593, I have reckoned the first days of the katuns as follows:[b]

Name of katun	Name of year	First day of katun	Date in the Christian era
8 Ahau	11 Ix	7 Chen	January 29, 1436
6 Ahau	5 Ix	7 Zotz	October 15, 1455
4 Ahau	11 Muluc	12 Kayab	July 3, 1475
2 Ahau	5 Muluc	12 Ceh	March 19, 1495
13 Ahau	12 Muluc	12 Yaxkin	December 5, 1514
11 Ahau	6 Muluc	12 Uo	August 22, 1534
9 Ahau	12 Kan	17 Moan	May 9, 1554
7 Ahau	6 Kan	17 Yax	January 24, 1574
5 Ahau	13 Kan	17 Zac	October 16, 1593

Anyone who has ever taken the trouble to collect the dates in old Mexican history from the various sources must speedily have discovered that the chronology is very much awry, that it is almost hopeless to look for an exact chronology. The date of the fall of Mexico is definitely fixed according to both the Indian and the Christian chronology, and this one fixed date makes it possible to harmonize, with approximate certainty at least, the two calendric systems:[c] but in regard to all that precedes this date, even to events tolerably near the time of the Spanish conquest, the statements differ widely. The chronology of the books of Chilam Balam is as bad or worse. In the first place, the list of traditional events is exceedingly meager; then, but few dates can be relied on with any degree of confidence. In most cases the arrangement of the entire statement shows that the dates were not actual dates, but were chosen according to a fixed scheme.

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[a] Zeitschrift für Ethnologie (1891), v. 23, p. 112.

[b] In an essay read before the Berlin Anthropologic Society in June, 1895.

[c] See Erläuterungen zu den Bilderhandschriften Alexander von Humboldts. Berlin, 1893.

Three events are recorded with some degree of accuracy, to wit, the final establishment of the Spaniards and the foundation of Merida, the death of a certain Ahpula, and the first appearance of the Spanish in the peninsula.

The final establishment of the Spanish was the result of the victory which they won on St. Barnabas's day, June 11 (old style), of the year 1541 over the powerful league of the hostile Yucatec chieftains in the city of Ichcanzihoo, afterward Merida.[a] The victory was followed, January 6, 1542, by the foundation of the Spanish city of Merida, which from that time forward was the capital of the province.[a] The statements of native chroniclers, and in accord with them also the first Spanish chronicle, Bishop Landa's, ascribe this event to the period known as 11 Ahau; and when in one of these statements, the second list in the Chilam Balam of Chumayel, the year 1519 is set down, in apparent contradiction to this, as falling in the period 11 Ahau, this seems to be due simply to a confusion of two events, the appearance of the soldiers of Hernando Cortes's fleet upon the peninsula in the year 1519 and the later final establishment of the Spanish in 1541. While the accounts as to the period generally agree throughout, statements as to the division of the period in which the event named befell differ very widely. If we are to believe Bishop Landa, the year 1541, the year in which the Spanish definitely established themselves in Merida, was the first one of the period 11 Ahau.[b] A chronicler generally trustworthy, as it seems, Nakuk Pech, the cacique of the village of Chac-Xulub-Chen, the present Chicxulub, who wrote about 1565, states that it was the fifth division of the period.[c] The second list of the Chilam Balam of Chumayel, mentioned above, ascribes the event to the seventh division of the period 11 Ahau.[d] Finally, the Chilam Balam of Mani asserts that the establishment of the Spanish at Merida occurred before the expiration of, that is to say during, the katun 11 Ahau.[e] Of these various statements, that of the Chilam Balam of Chumayel seems to agree tolerably well with my computation, for, according to this, the seventh division of 11 Ahau would have ended on July 18, 1541, and the decisive engagement at Merida, as I stated above, took place on June 11 of that year. Nakuk Pech's statement differs by two years; he must have ascribed the beginning of the katun 11 Ahau to the year 1536 of the Christian era. Bishop Landa's statement is not likely to be founded on any more exact information. Nakuk Pech gives the name of the year 1542, in which the Spanish founded the city of Merida, as 13 Kan. This accords with the other agreements occurring in the books of Chilam Balam—with one exception, of which I shall speak directly—and also with the above computation.

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[a] Cogolludo, v. 3, chap. 7.

[b] Relaciones de las cosas de Yucatan, edid. de la Rada y Delgado, p. 103.

[c] Brinton, Maya Chronicles, p. 193.

[d] Same place, p. 168.

[e] Same place, p. 98.

The second one of the dates which are recorded with comparative accuracy is that of the death of a certain Ahpula, or Ahpulha, who is called Napot Xiu in the second list of the Chilam Balam of Chumayel. The latter is the true name of the man, who was, therefore, on his father's side, of the tribe of Xiu, the reigning dynasty of Mani, and on his mother's side of the Pot tribe. The other word, apparently, merely signifies the quality, the trade, the occupation of the person in question. Ah-pul, "the thrower", or ah-pul-ya, ah-pul-yaah, "thrower of evil", "thrower of diseases", was the technical name for a certain class of magicians of whom it was believed that they busied themselves in casting sickness upon their fellow-men. The death of a dreaded conjurer was therefore announced. From the name we must suppose that it was an event which especially affected the territory of the principality of Mani. Ah Napot Xiu, by the way, also occurs as the name of a mythic or historic personage for whom one of the 13 katuns is named.

The death of this Ahpula is given in three of the lists—the Chilam Balam of Mani, that of Tzimin, and the first list of the Chilam Balam of Chumayel—in perfect agreement and with remarkable accuracy. According to these authorities Ahpula died six years before the expiration of katun 13 Ahau, in the year 4 Kan, on the 18th of the month Zip, and on the day 9 Imix. The second list of the Chilam Balam of Chumayel, differing from these, sets down Ahpula's death in the first division of 11 Ahau. Besides, the Chilam Balam of Mani and that of Tzimin give the year as answering to the year 1536 of the Christian chronology; but in the first list of the Chilam Balam of Chumayel the figure 158 is given, which is open to various interpretations.[a]

Definite as these statements seem to be, we nevertheless meet with insoluble contradictions when we undertake a closer comparison of the dates handed down to us. A serious discrepancy is encountered at the outset in the divergent assertion of the second list of the Chilam Balam of Chumayel. On the other hand, "six years before the close of 13 Ahau" can not have been the year 1536. It was either (as according to my reckoning) the year 1528 or (if we consider the statement of Nakuk Pech that the establishment of the Spaniards in Merida was the fifth division of 11 Ahau to be correct) the year 1530. And if, as Perez did,[b] we read "in the sixth year the course of the katun 13 Ahau", instead of "six years before the close of 13 Ahau", we then have the year 1520 or 1522. But setting aside these accordances with Christian chronology, which may all be merely marginal notes, added later by ignorant persons, we have a still more serious contradiction in the dates given according to the Indian chronology itself: 9 Imix was indeed the 18th day of the month Zip in a year whose first month began with a day 4 Kan; but such a year was only the year 1493, and after that the year 1545, according to the unanimous statements contained in the books of Chilam Balam and other sources of information in regard to the Christian years that correspond to the Indian years. The year 1493 can not possibly have belonged to the katun 13 Ahau, unless we are to regard as false all the other accounts, which agree in stating that the Spanish permanently settled at Merida in 11 Ahau, that Christianity was introduced in 9 Ahau, that Bishop Landa died in 7 Ahau, and that 5 Ahau began in the year 1593.

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[a] Brinton, Maya Chronicles, pp. 98, 142, 156.

[b] Stephens, Incidents of Travel in Yucatan, v. 1, p. 443.

The solution of this contradiction will become possible, if ever, only when a critical recension of the text has been made by a comparison of the various copies of the books of Chilam Balam, and the original parts have been separated from later additions and marginal notes.

The third event recorded with comparative accuracy is the first appearance of the Spanish on the Yucatan peninsula. Here a discrepancy of statement would seem comprehensible. For, in the first place, we may doubt what is meant by the first appearance of the Spaniards, whether it be the year when the Mayas for the first time beheld a Spaniard, or that of the appearance of the first armed troops on the coast of Yucatan, or the year when the Spaniards first penetrated into the interior of the country and strove to conquer it. The statements in the native records all seem to refer to the first of these three events, which occurred in the year 1511, when the caravels of Valdivia, on the return voyage from the isthmus of Darien to Hispaniola, foundered on the shoals near Jamaica, and the survivors of the crew were driven in a wretched boat upon the coast near the island of Cozumel, among them the deacon Gerónimo de Aguilar, who was afterward liberated by Cortes. This event is set down by both the book of Chilam Balam of Mani and that of Tzimin against katun 2 Ahau, that is, the period preceding katun 13 Ahau, when Ahpula Napotxiu is said to have died.

"Mayapan was destroyed in 8 Ahau. Then followed the katuns 6 Ahau, 4 Ahau, and 2 Ahau. In the progress of the years of this katun the Spanish appeared for the first time; they came for the first time to this land, to the province of Yucatan, sixty years after the destruction of the citadel". So we read in the Chilam Balam of Mani.

In the Chilam Balam of Tzimin various lists are written together. Katun 8 Ahau and the destruction of Mayapan are given twice. In the first list at 2 Ahau we read: "In stone '13' (the division) the strangers (the Spaniards) appeared; they came for the first time to the land of the province of Yucatan[a] ninety-three years (after the destruction of Mayapan)". In the second list, at 2 Ahau, we have merely: "Then was the great eruptive sickness" (nohkakil). So, too, in the Chilam Balam of Chumayel we have at 2 Ahau only "the eruptive sickness, the great eruptive sickness (kakil noh kakil)".

If we examine the list we find that the thirteenth division of 2 Ahau falls, according to my reckoning, in the year 1507, or, if we prefer the estimates of Nakuk Pech, in the year 1509. This does not agree with facts, for Valdivia's shipwreck, as I stated above, took place in 1511; and Nakuk Pech also states in two places in his chronicle that the Spanish first came to Yucatan in the year 1511. At all events, the year 1511 fell in the katun 2 Ahau, for the latter did not end until the year 1514 or, according to Nakuk Pech's statements, the year 1516. The statement of the native chroniclers, within these approximately established dates, is therefore correct. The great eruptive sickness which occurred, according to the chroniclers, at this very time is described by Bishop Landa as an epidemic which caused great pustules of such a nature that "the body became putrid and stinking and the limbs fell off piecemeal within four or five days".[b] It is not improbable that the first appearance of the Spanish was followed by an epidemic of smallpox, that scourge of the Indian race, for the word kak, "fire", is used later and at the present day generally for "eruptive sickness", especially smallpox.[c] The chroniclers ascribe to 4 Ahau, the period preceding katun 2 Ahau, a pair of national calamities: a general mortality (maya-cimil), which Landa describes as a "contagious, pernicious fever which lasted 24 hours, after which the body swelled and burst and was full of worms"; furthermore, a great slaughter. Landa speaks of 150,000 men who fell in the battles. Native sources call it oc-na-kuch-il, "where the Zopilotes come into the houses"; that is, where the dead lie about everywhere unburied.

Landa also tells us of a great whirlwind prior to these events which razed the country and overthrew all high buildings, but this is not mentioned by native authors.

The great event in the pre-Spanish history of Yucatan is the destruction of Mayapan. Mayapan was a city in the interior of Yucatan, in the territory of the later principality of Mani, of which considerable ruins still existed at the time when Bishop Landa wrote. Landa mentions especially large hieroglyphic stones of the nature of those usually prepared and set up at the beginning of a katun. The name is Mexican. The word pan, to be sure, is given also in the Maya dictionary, with the meaning, "flag", "standard", but, although this word, too, is probably derived from the Mexican pam-itl pan-tli, the etymology of the name Mayapan is in all probability very different. Mayapan means "among the Mayas", "in the territory of the Mayas", as Otompan means "among the Otomi", "in the land of the Otomi". It is a purely Mexican name construction, quite unlike that in use among the Mayas, where the constituent part showing the local or other relation is prefixed, not suffixed (for example, Pan-choy, "in the lake"; Ti-kax, "in the wood"; Ti-bolon, "in the nine"; Ti-ho, "in the five", etc.).

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[a] The wording is almost the same as in the Chilam Balam of Mani, except that tz'ul, "strangers", is used instead of "espanioles", and ilcob is used erroneously for ulcob, "they came"; but possibly the former was the original word, in which case it ought to be translated "they were (first) seen (in the land of Yucatan)".

[b] Pestilencia de unos granos grandes que les pedria el cuerpo con gran hedor, de manera que les caian los miembros á pedazos dentro de 4 ó 5 dias.

[c] "Viruelas, granos í erupcion pustulera del cuerpo" (Perez).

The name Mayapan, therefore, recalls the period of the pre-Spanish history of Yucatan, when fragments of the great Mexican nation played a part in that territory. It is to be inferred from various facts that these relations were very active and that the influence of the Mexicans was felt for a long time.

The most famous city in old Yucatan and the most famous ancient seat of its rulers was Chichen Itza. Attention has long been drawn to the fact that the sculptures in the ruins of this town are of a wholly different character from those of the great ruined cities of the west, Copan and Palenque, and also from sculptures known to us, for instance, from the region of Merida. The attitude of the figures is stiffer, the heads are not deformed, and much about the dress and adornment reminds us of the types in the Mexican picture writings. The principal figures in particular all wear on the forehead the headband with the triangular plate of turquoise mosaic, the xiuh-uitzolli of the Mexican kings. Charnay, for one, therefore believed that he found in Chichen Itza manifest evidence of the correctness of the ancient statements in regard to the migration of the Toltecs into Yucatan and Guatemala.

Mayapan in comparison was a principality that sprang up in a modern period, one that first became prominent after the downfall of the kingdom of Chichen Itza and in consequence of that downfall. The cause of this downfall is ascribed in all the accounts to the treachery (kebanthan) of a certain Hunac-ceel, and "the seven men of Mayapan"—Ah zinteyut chan, Tzuntecum, Taxcal, Pantemit, Xuchueuet, Ytzcuat, and Kakaltecat—are named as the direct authors of the destruction of Chichen Itza. Of these seven names the last six are purely Mexican, and the first name is a combination of a Mexican and a Maya word, with a Maya prefix, which means " the ". Landa's story that the rule over Mayapan was founded by a family which was supported by the Mexicans living in the great trade centers Tabasco and Xicalanco is therefore fully confirmed by native authorities.

Landa further declares that this family, who ruled in Mayapan, the Cocom, practiced such constantly growing oppressions that the various village chieftains at last rose against them under the leadership of the chieftain family of Tutul Xiu, very powerful among the ahuitz (" people of the sierra ") in the sierra district, that is, in the district of Mani, and slew all members of the Cocom tribe within their reach and destroyed the " citadel Mayapan ". The destruction of Mayapan is accordingly the great event in the pre-Spanish history of Yucatan, as it represents the national reaction against a government supported by strangers; but its result was that there was thenceforth no central power in the land. Various chieftain families possessed greater or smaller portions of the land and waged war one against another by every means of treachery and open violence.

According to Landa's statement, at the time when he wrote his Relaciones, that is, in the year 1556, about 120 years had passed since the fall of Mayapan. Most of the native sources place the event in the katun 8 Ahau, and this agrees exactly with both Landa's statement and my reckoning, for according to my reckoning katun 8 Ahau began on January 19 of the year 1436.

Important as this event was, even the native chroniclers are not agreed in regard to it. For although, as I said, the majority of them accept katun 8 Ahau as the correct date, yet there is a list, the second of the Chilam Balam of Chumayel, which places the destruction of Mayapan in katun 1 Ahau, which would be in the period between the years 1377 and 1397; and in another list, that of the Chilam Balam of Mani, katun 8 Ahau and katun 11 Ahau seem to be given side by side. Katun 1 Ahau seems to be given as the date of the event because this list accepts katun 1 Ahau as the beginning of a great cycle of 13 katuns; and the selection of 11 Ahau seems to rest upon similar considerations, for the circumstance that the great and destructive event of the permanent establishment of the Spanish in the country occurred in katun 11 Ahau afforded many of the native authors a motive for beginning the greater cycle of katuns with katun 11 Ahau.

No serious attempt was made to fix with chronologic precision the events previous to the destruction of Mayapan which are mentioned—the fall of the principality of Chichen Itza, the sojourn of the Itza people in Champoton, the immigration into Yucatan, and the first founding of Chichen Itza. Here the principal events are all set each a full period of 13 katuns before the succeeding one; that is, all either in 8 Ahau or all in 1 Ahau, the computation including in all four full periods of 256 years+146 days. A peculiar feature is found in a third list contained in the Chilam Balam of Chumayel, which is printed in Brinton's Maya Chronicles, pages 178 and 179, and which for various reasons claims our especial interest. Katun 4 Ahau is mentioned here before the historic events occurring in 8 Ahau, on the one hand, as the period in which the mythic kingdom of Chichen Itza came to an end, and therefore as the period in which the human race took its origin; that is, when the great and small descent (great and small immigration) occurred and men met together in Chichen Itza from the four cardinal points. This is the only passage known to me in the books of Chilam Balam which seems to contain any reference to the normal and initial date of the Dresden manuscript—4 Ahau, 8 Cumku.

Although the books of Chilam Balam do not yield very much for chronology, they are all the more fruitful in intelligence regarding that side of the Maya calendar which was incontestably the most assiduously cultivated and which undoubtedly occupies a large space in the Maya manuscripts, composing the chief, perhaps the only, contents thereof; that is, the augural side, the consideration of the divinatory power which belongs to the signs and numerals of days and the other greater and lesser divisions of time. But I must reserve the explanation of these matters for a future communication.

TEMPLE PYRAMID OF TEPOXTLAN

BY

EDUARD SELER

TEMPLE PYRAMID OF TEPOXTLAN[a]

By Eduard Seler

The causeway leading from the City of Mexico, which runs southward, formerly through the waters of the salt lake itself, now through meadow land, to Churubusco, the ancient Uitzilopochco, where the road branches off to Chalco, and to the margin of the great lava stream, which extends from a little volcano below the lofty Cerro de Ajusco to the plain lying 2,300 meters above the sea. A traveler leaving the city by this road sees before him a high mountain range, which connects the towering Ajusco with the snow-capped cone of Popocatepetl and in this direction forms the termination of the undrained basin of Mexico. This mountain range is crossed from Xochimilco by a long, gradually ascending path, which finally leads into extensive pine forests covering the whole breadth of the ridge. Another road, from Chalco, runs in the valley of Amecameca, immediately at the western base of Popocatepetl, to a less elevated path. In both places the mountain slopes on the south quite precipitously to the valleys below, the streams of which flow into the Rio de las Balsas. These are the valleys of Cuernavaca, situated about 1,600 meters above the sea, and of Yautepec, lying about 500 meters lower. They have been celebrated from ancient times for their mild climate. Here the Mexican kings had their pleasure gardens, in which they cultivated plants of the tierra caliente that did not thrive in Mexico itself. Cortes did not fail to include this district within the limits of his marquesado, and the viceroys, and also the unfortunate Maximilian, loved to sojourn in this favored vale. Midway between Yautepec and Cuernavaca, directly at the foot of the lofty mountain range towering on the north, on a riblike spur at the upper end of a range of hills and ridges which divides the valleys of Yautepec and Cuernavaca, in the center of a small plain forming the extreme northwestern extremity of the valley of Cuernavaca, lies the small town of Tepoxtlan. Although but 3 miles[a] distant from each of the cities previously named, this place, because it is situated quite away from the great highroads radiating from the capital and at the foot of the mountain, has remained until very recently little known or investigated. The ancient inhabitants, who undoubtedly were of the same race as the Tlalhuics of Cuernavaca, have in the main shared the history of the latter. Cuernavaca, the ancient Quauhnauac, was the first territory which fell into the hands of the Mexicans when they began to spread beyond the limits of the valley. In the reign of the third Mexican king, Itzcouatl, who reigned in the second quarter of the fifteenth century, the siege and subjugation of Cuernavaca is reported, and under Motecuhzoma Ilhuicamina, the king succeeding Itzcouatl, Tepoxtlan is named in the Mendoza codex, together with Quauhnauac, Uaxtepec, and Yautepec, among the conquered cities (see hieroglyphs *a* to *d*, figure 83). The Historia Mexicana of the year 1576 (Aubin-Goupil codex) reports in connection with the accession to the throne in the year 1487 of King Ahuitzotl, which was celebrated with great sacrifices of captives, that new kings had been installed in Quauhnauac, Tepoxtlan, Uaxtepec, and Xiloxochitepec (see hieroglyphs *e* and *f*).

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[a] Die Tempel pyramide von Tepoztlan, Globus, v. 73, n. 8.

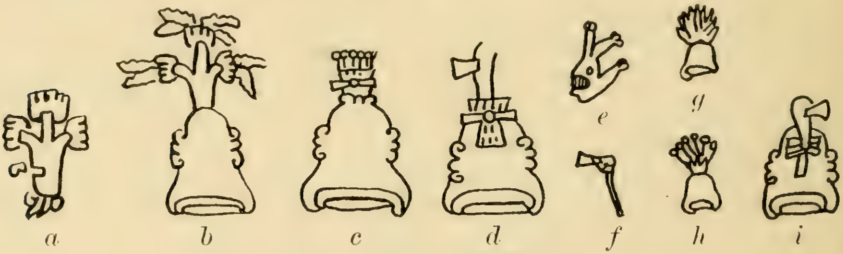

FIG. 83. Symbols of pueblos, from Mexican codices.

In the tribute list (Mendoza codex, page 26, no. 13) Tepoxtlan, the "place of the ax", is again put with the same towns in the Uaxtepec group (see *i*). Cortes came into contact with Tepoxtlan in the year 1521 on his march from Yautepec to Cuernavaca, when, because the inhabitants did not voluntarily surrender, he burned the town. Bernal Diaz extols the fine women (muy buenas mugeres) and the booty which the soldiers obtained here. After the establishment of Spanish rule Tepoxtlan, with Cuernavaca, was included in the principality, which, with the title Marques del Valle de Oaxaca, was awarded Cortes as recompense for his distinguished services.[b] A manuscript Relacion of the year 1582, which is preserved with others of like character in the Archivo General de las Indias in Sevilla, refers to the place as Villa de Tepoxtlan, and mentions six estancias subordinate to it. In the same Relacion it is also stated that the Mexican language was spoken by the inhabitants, both by those who still lived in the place and those who, having become disgusted with the country, had emigrated to the neighborhood of Vera Cruz. Through incorporation into the marquesado the town was doubtless saved from oppression and vexation by lesser encomenderos. In their isolated mountain home the people have been able to preserve their language and their old customs. The place has now a population numbering from 5,000 to 6,000 souls of fairly pure Indian descent, who speak pure, uncorrupted Mexican, are proud of their descent, and cling tenaciously to the ancient traditional customs. It is deserving of mention as an interesting fact that since last year a newspaper has been published here with the title El Grano de Arena, which, besides the Spanish text, always contains several columns of matter in the Mexican language.

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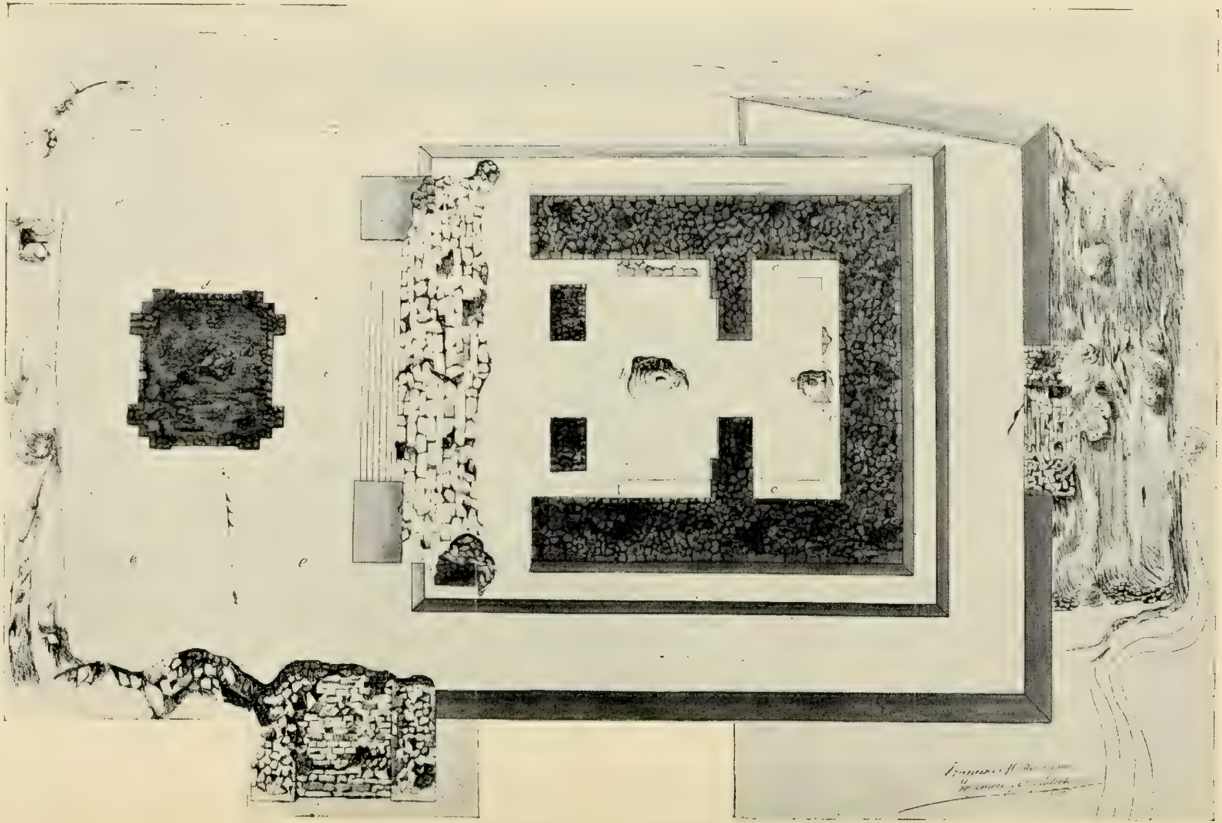
[a] 14 English miles. Ed.

[b] See the picture manuscript of the Biblioteca Nazionale in Florence, folio 37.

As we passed through the town of Cuernavaca in December, 1887, on the return from our expedition to Xochicalco we were told that there was a pyramid in Tepoxtlan as interesting as that of Xochicalco. We wished to visit it, but the governor of the state of Morelos told us at that time—whether correctly I leave undecided—that he could not permit it, for " these Indians are terrible ". As we had still so much else to see we did not insist upon it. Beyond this general report nothing has been known until very recently of the pyramid of Tepoxtlan; but two years ago, when the extraordinary session of the Americanist Congress was about to be held in Mexico and an effort was being made throughout the whole country to furnish something fresh in the nature of relics and finds for the scholars attending this meeting, the thought arose even in Tepoxtlan of freeing the pyramid of that locality from the rubbish hiding it from view and of opening up its interior chambers and outer walls. A young engineer, Francisco Rodriguez, a native of Tepoxtlan, followed out this idea with enthusiasm and strove to carry it into execution. He was able to induce the people of his district to furnish volunteer labor, and thus in the months of August and September, 1895, the pyramid was uncovered, a result of which the Tepoxtees themselves are now quite proud. A description of the pyramid, including a plan of the structure, was submitted by Mr Rodriguez to the congress assembled in October of the year 1895. It has now been published in the proceedings of the congress. Later, accompanied by Mr Rodriguez, Mr Marshall H. Saville visited the pyramid and took several photographs of it. In August, 1896, Mr Saville read a report on this pyramid before the American Association for the Advancement of Sciences, convened in Buffalo, which was published in volume 8 of the bulletins of the American Museum of Natural History, and again later in the journal Monumental Records. From this and from Mr Rodriguez's report I gathered the information which appears below:

The pyramid is situated about 2,000 feet above the town, on a cliff detached from the ridge of the mountain range, which north of the town rises rugged and precipitous above the level plain. The pyramid itself is not visible from the plain, but its approximate location is marked by huge crags which on the left project above the mountain ridge. From the foot of the precipice the road ascends through a small canyon. Several long flights of steps are encountered, some of them cut into the rock, others built of masonry. Carved inscriptions are to be seen here and there on the perpendicular walls of the ravine. About halfway to the top the road emerges from the canyon and winds aloft on the very face of the cliff. For nearly 100 steps, according to Saville's statement, the ascent is almost perpendicular. Steps are hewn into the rock or supported by masonry. When Rodriguez began his excavations here he was obliged to use ladders in two places, because the way was obstructed by fallen rock fragments. When the top of the cliff is finally reached it is seen to consist of two separate plateaux which are connected by a narrow neck. On the western one of these two plateaux is the temple pyramid; the eastern one is almost completely covered with foundation walls of buildings of different kinds and sizes, which probably were the dwellings of priests, and other buildings adjoining. Behind rises a rocky cliff covered with pine woods, which can only be reached from this spot, and here Mr Rodriguez found running water.

Viewed from the east side, the pyramid is seen to rise in three terraces over a rough substructure that forms a horizontal base on the uneven, rocky ground (see figure 84, from a photograph). A flight of steps on this side leads up to the top of the first terrace, which, rising to a height of 9.5 meters above the rock foundation, forms the broad base of the building proper, formed by the two other terraces. A second stairway on the south side near the entrance of the temple leads to the top of the lower terrace (see the plan, plate XL). On the west side, which is the front of the temple, this first terrace forms a small platform (*e* on the plan, plate XL), and in the center of this there is a low rectangular bench, *d*, with serrated corners, up which flights of steps probably led on all four sides. The location of this little structure corresponds to the spot where, in the great temple of Mexico, stood the two round stones, the quauhxicalli and the temalacatl, and it was probably used for similar sacrificial purposes. I also found a very similar structure in Quiengola in the middle line of the platform of the east pyramid, whose front likewise faced the west. From this platform a stairway leads to the top of the second terrace and to the entrance of the temple



PLAN OF THE TEMPLE PYRAMID OF TEPOXTLAN

itself, which the third terrace forms. This temple is formed of walls 1.9 meters thick, constructed of blocks of red and black tezontle (porous volcanic rock) with copious mortar of lime and sand, and reaching to a height of 2.5 meters. The roof has fallen in. From the ruins Mr Rodriguez was still able to determine that it had been a flat arch, with a maximum rise of 0.5 meter, a span of 5 meters, and a thickness of 0.7 meter, formed of pieces of tezontle and a great quantity of mortar, the use of which in thick layers made the construction possible. On the site of the front wall are to be seen the remains of two rectangular masonry columns, which left a wide central doorway with a narrow one on each side. The interior space is divided by a wall, 0.9 meter thick, pierced by a doorway, into two rooms, of which the front one runs back 3.73 and the inner one 5.2 meters, with a width of 6 meters. In the middle of the front room Rodriguez found a rectangular depression[a] (*b* in the plan, plate XL), and in it remains of charcoal and a couple of well-preserved pieces of copal. This was probably, therefore, the hearth where the sacred fire burned and whence, perhaps, glowing coals were obtained with which to burn incense to the god.

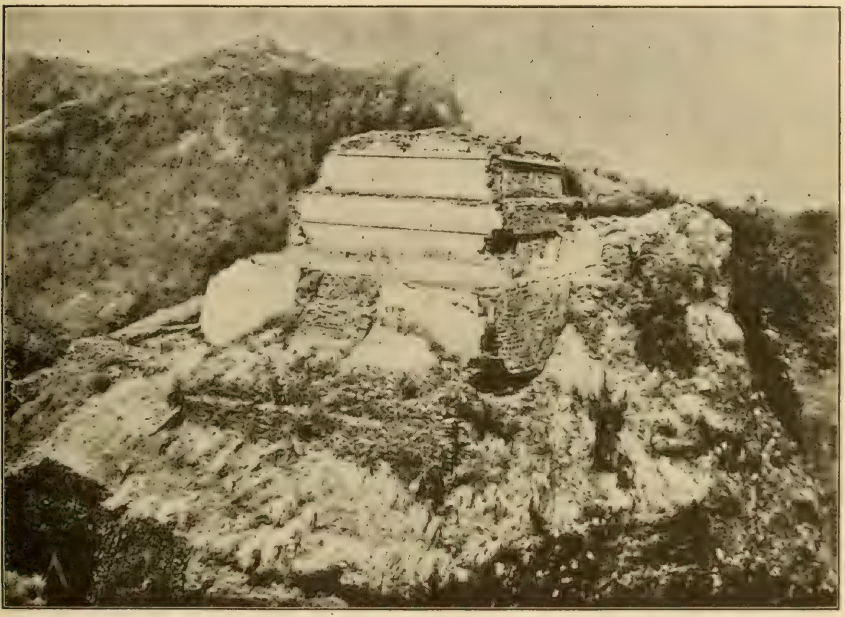


FIG. 84. Temple pyramid of Tepoxtlan, valley of Cuernavaca.

In the axis of the inner chamber against the rear wall stood the idol. The doorway connecting the two rooms has a width of 1.9

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[a] "Una oquedad". Saville erroneously writes in this place "a raised rectangular platform".

meters. It is flanked by two pillars, which are covered with stucco and richly ornamented. At the bottom there is a sort of fluting; above this a grecque in relief, like those in the palaces at Mitla, and at the top a picture of the sun, only the lower part of which is still preserved. All are painted in color, and the colors are still tolerably fresh. In the place where the idol stood, in the rear room, Rodriguez found remains of a substructure (*a* on the plan, plate XL) among which were two sculptured fragments, one of them, according to his account, containing a bas-relief, of what character is not stated, painted in a deep red color; the other, the relief picture of a Mexican royal crown (xiuh-uitzolli). Both pieces are now preserved in the cabildo of Tepoxtlan, in a room transformed into a museum. The most interesting feature of the inner apartment are the benches, ornamented on the front with carved stones. These run round a part of the front room and along the rear and both lateral walls of the back room (*c* on the plan, plate XL). They display at the upper part a narrow, somewhat projecting frieze, on which, it seems, the twenty characters for the days are represented. Beneath this (see figure 85), on each lateral wall, there are placed four large slabs, with symbols in relief, apparently relating to the four cardinal points. On the south side we see what seem to be the four prehistoric ages; on the north side the gods corresponding to the four

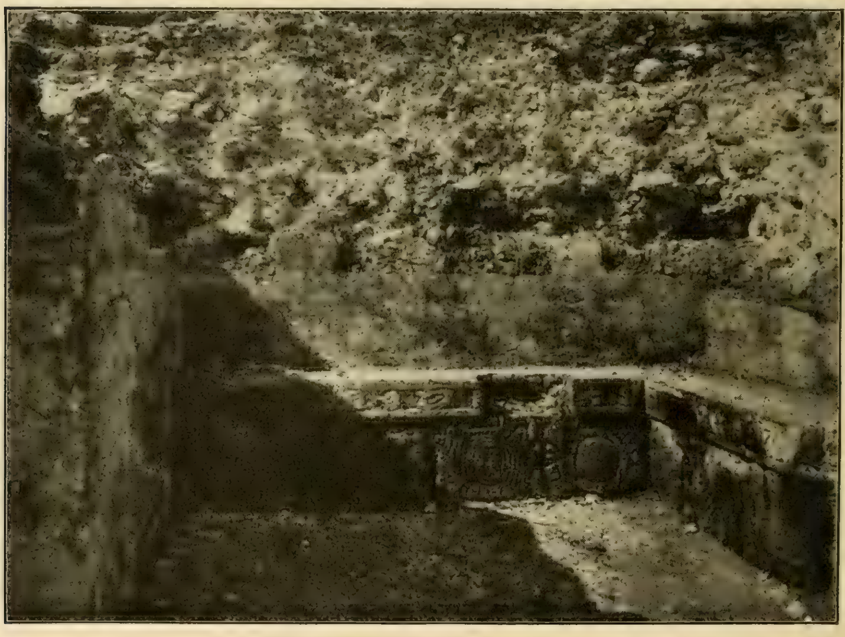

FIG. 85. View of the interior of Tepoxtlan, after Saville.

cardinal points are represented by their symbols. I must forego attempting to explain these more exactly until casts or good photographs are submitted for study. The reliefs on the rear wall are, perhaps, of a still more interesting nature, but unfortunately here a portion of the bench is destroyed. It is to be hoped that Mr Saville, who has now started again for Tepoxtlan and Xochicalco, will bring home satisfactory casts and make known these representations.

Finally, in addition to the above, two stone tablets, which were found built into the south wall of the lower terrace of the pyramid, are of special importance. One (*c*, figure 86) contains the hieroglyph of King Ahuitzotl, who derived his name from a small ghostlike water animal, which, according to Mexican tales, played the rôle of a sort of nixy and was represented in this form. On the other slab a rabbit is depicted, and beside it are 10 circles, which would indicate the year 10 Tochtli, corresponding to the year 1502 of the Christian chronology, the last year of Ahuitzotl's reign, or the year of his death. Saville has interpreted these two tablets quite correctly, and he concludes that the year of the erection of the temple and its builder were thus immortalized. This is probably correct, in which case, in truth, "the ancient temple of Tepoxtlan would be the only aboriginal structure still standing in Mexico to which we can with probability assign a certain date".

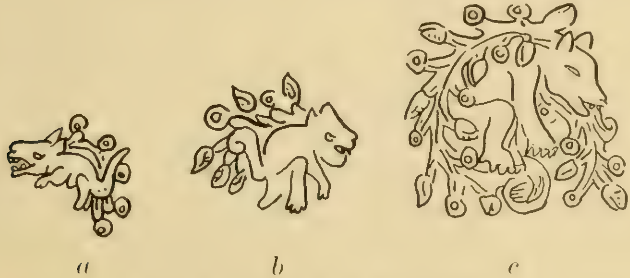

FIG. 86. Glyphs of the king Auitzotl.

It would next be desirable to know to which god sacrifices were offered in this place. Neither Rodriguez nor Saville have attempted to answer this question. I am fortunately in a position to be able to decide this matter beyond dispute. There was a class of deities among the Mexicans which excited the special wonderment and abhorrence of the monks and the Spaniards generally. These were the pulque gods, or the gods of drunkenness. As we say (in German) of a drunken man that "he has got an ape", so the Mexicans, of course, with a doubtless wholly different train of thought, spoke of a rabbit (tochtli), under whose influence the intoxicated person acted. They said he had "rabbited himself" (omotochtili), when anyone drank to insensibility and in this condition came to any harm. Hence the gods of drunkenness were also called Totochtin, "rabbits". The day ome Tochtli, "2 rabbits", was under their influence. Whoever was born on that day, if he did not take special precautions, seemed inevitably doomed to become a drunkard. Since there were different kinds of drunkenness, intoxication manifesting itself with different people in very different ways, the "400 rabbits" (centzon totochtin) were spoken of "as though one intended to say that pulque made innumerable kinds of drunkards".[a] Hence the pulque gods were also designated as centzon Totochtin, the "400 rabbits", and a large number of them were specified by particular names. Concerning the significance of these deities, this one fact is of primary importance, that they are all closely related to the earth goddess. Like her, they wear the golden Huaxtec nose ornament, shaped like a crescent, which was called yaca-metztli. This ornament is so characteristic of them that it is usually marked on all objects dedicated to the pulque gods. A second characteristic of these deities is the bicolored face, painted red and black. The two colors, in many parallel red and black longitudinal stripes, likewise served to denote an object as consecrated to the pulque gods. Thus, in the picture manuscript of the Biblioteca Nazionale in Florence, the manta de dos conejos, "blanket of the 2 rabbits" (ome-tochtilmàtli), the shoulder covering of the pulque gods, and, in the same manuscript, the shield of Macuil-Xochitl, are marked in this way. These gods are characterized by a remark which occurs above them in the picture manuscript of the Biblioteca Nazionale in Florence still more exactly than by their relation to the earth goddess. The pulque gods in this manuscript are represented after or among the fiestas móbiles, immediately after the feast of flowers (chicome xochitl and ce xochitl), and it is stated in this place that "when the Indians had harvested and gathered in their maize, then they drank to intoxication and danced while they invoked this demon and others of these four hundred". It seems, therefore, that here we have to do with gods of husbandry, who were to impart virtue to the soil as the pulque—and this is always brought out—imparts courage and strength and was the drink of the fearless and strong, the eagles and jaguars (quauhtli and ocelotl), that is, the warriors.

Among the names by which these gods were known, in addition to ome Tochtli, "2 rabbits", which refers directly to their nature as pulque gods, we meet almost exclusively such as are derived from place names, or at least are formed in a similar manner to those derived from place names, as Acolhua, Colhuatzincatl, Toltecatl, Totoltecatl, Izquitecatl, Chimalpanecatl, Yauhtecatl, Tezcatzoncatl, Tlaltecayoua, Pahtecatl, Papaztac, Tlilhua; and a pulque god Tepoxtecatl, a god of Tepoxtlan, is repeatedly and prominently mentioned.

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[a] Sahagun, v. 4, chap. 5.

If the fact is taken into consideration that the temple which I have described above is still called by the people "casa del Tepozteco", then the supposition is not far to seek that it is our Tepoxtlan from which the pulque god Tepoxtecatl (figure 87) derived his name, and this supposition is confirmed by two good witnesses. In the Relacion that I already mentioned at the beginning, which was the reply to an inquiry blank, dispatched under King Philip II with the same wording to all towns of the Spanish colonial territory, the question concerning the name of this place and the meaning of the name is answered thus: "They say that the place is named Tepoxtlan because, when their ancestors settled this land, they found this name already in use, for those who settled there before (or first) said that the great devil, or idol, which they had, was called Ome tuchitl, that is, '2 rabbits', and that he bore the surname Tepoxtecatl". The other testimony is furnished by the often-mentioned picture manuscript of the Biblioteca Nazionale in Florence, which, besides various other pulque gods, represents Tepoxtecatl in full figure and in hieroglyph and remarks concerning him: "This is the representation of a great iniquity which was the custom in a village named Tepoxtlan; namely, when an Indian died in a state of intoxication the others of this village made a great feast to him, holding in their hands copper axes which were used to fell wood. This village is near Yautepeque. They are vassals of the Lord Marques del Valle".

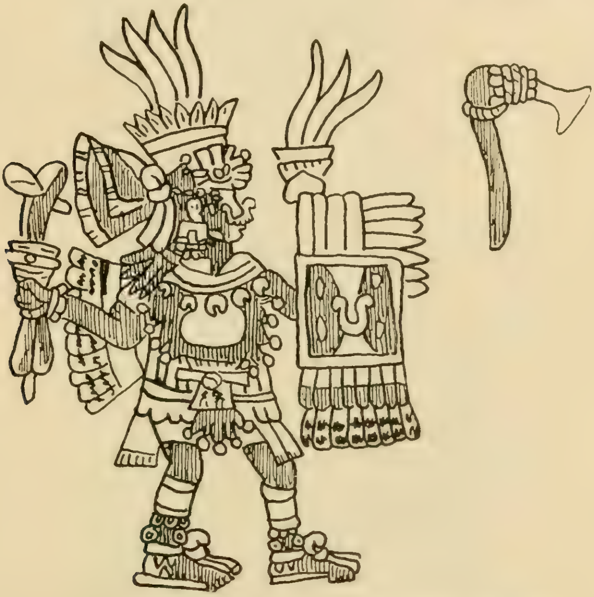

FIG. 87. Tepoxtecatl, the pulque god, from Mexican painting in Biblioteca Nazionale, Florence.

In figure 87 I give the picture of the pulque god Tepoxtecatl and

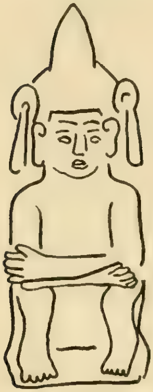

FIG. 88. Stone idol from Tepoxtlan.

his hieroglyph, the copper ax, from the picture manuscript of the Biblioteca Nazionale in Florence. The various things by which these gods are usually distinguished in the picture manuscripts are here given distinctly and well—the bicolored face, the crescent-shaped nose ornament (yaca-metztli), the bicolored shield (ometoch-chimalli) adorned with the same nose crescent, the long necklace hanging down, made of the herb malinalli (tlachayaual-cozcatl), and the stone ax (iztopolli, tecpatopolli). This picture indeed gives very little assistance in determining the appearance of the idol that stood in the cella of the casa del Tepozteco. When I was in Cuernavaca I saw in the house of the licenciado Cecilio Robelo a stone image, which originally came from Tepoxtlan. I made a hasty sketch of it at the time, which is reproduced in figure 88. There was a very similar stone image from

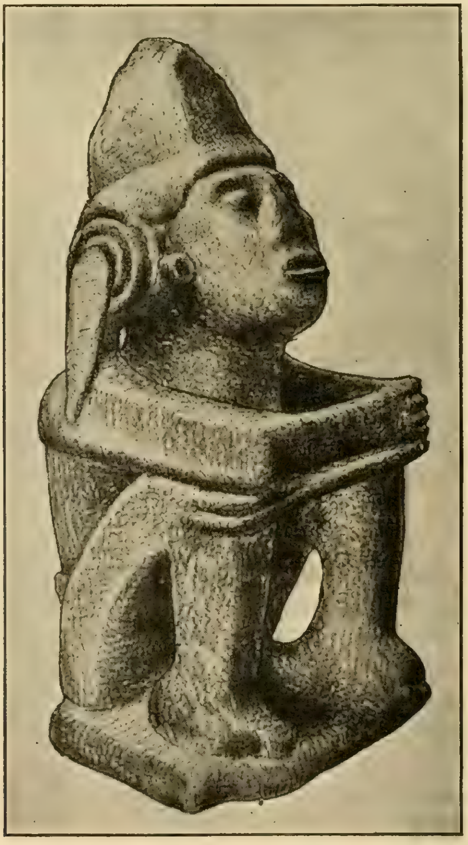

FIG. 89. Stone figure from the Uhde collection.

Huautla in Mr. Robledo's possession. In the old Uhde collection in the Royal Museum of Ethnology in Berlin there are others of a very similar character (figure 89). These are by no means images of the pulque gods, but probably represent Macuil-xochitl, the god of gaming, who is indeed frequently named together with the pulque gods. If any stone image is entitled to give us an idea of the idol which stood in the cella of the casa del Tepozteco, it is the fine statue in the Musée du Trocadero (figure 90), which is reproduced under the title "Statue en calcaire, Toltec armé de la hache de pierre" on page ix of the magnificent album recently published with the title "Galerie Américaine du Musée d'Ethnographie du Trocadero", for which the Duc de Loubat, with his accustomed liberality, has again provided the means. That is without question a pulque god, a Tepoxtecatl, distinguished by the crescent-shaped nose

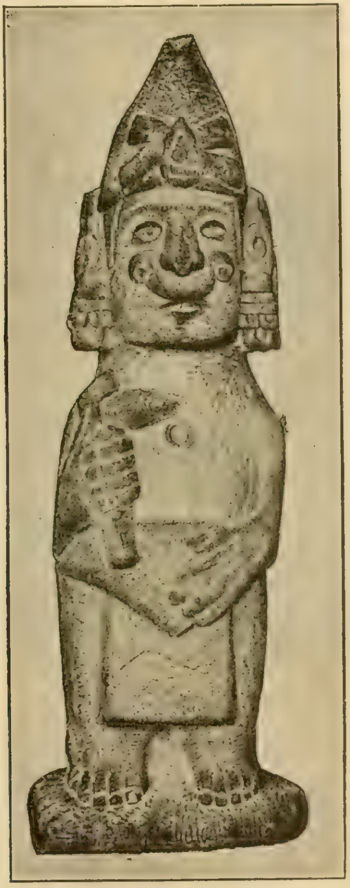

Fig. 90. Stone figure of pulque god, Trocadero Museum.

plate, the stone ax, the ear pendants, which correspond exactly to those in our figure 87, the frontal in the form of a Mexican royal crown, examples of which are also worn by the pulque god in the Borgian codex, page 26; Codex Vaticanus B, page 70 (or Codex Vaticanus 3773, page 31) and Codex Vaticanus B, page 7 (or Codex Vaticanus 3773, page 30), and lastly also by the forehead knot of Quetzalcoatl, which is to be seen likewise on the pulque god in Codex Telleriano-Remensis II, page 16, in Codex Vaticanus A, page 35, and, in a somewhat different form, also on page 11 of the Tonalamatl of the Aubin-Goupil collection.

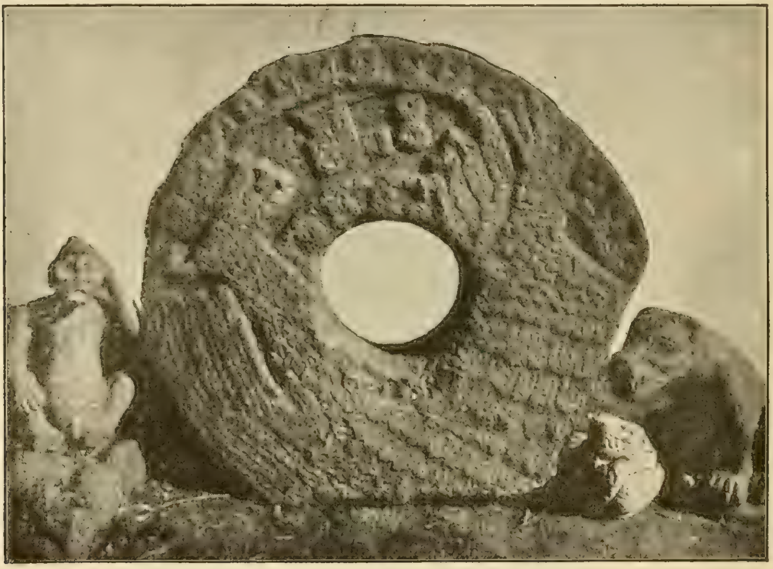

FIG. 91. "Juégo de pélota", from Tepoxtlan.

In conclusion, I give in figure 91 the photographs of several other relics which were found in Tepoxtlan. The ring-shaped stone in the center came from a ball ground. On it there is the large figure of a bird and thereunder the date "2 house" (ome Calli).

It is to be hoped that the interest once aroused among the patriotic inhabitants of Tepoxtlan will continue, and that further investigations will produce other important material for the study of the ancient civilization and history of these regions.[a]

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[a] I am indebted to Dr Max Buchner, of Munich, for the photographs (figs. 84 and 91), and for the plan (pl. XL), drawn by Mr Rodriguez, to Mr Marshall H. Saville, of New York. I was enabled to make use of the picture manuscript of the Biblioteca Nazionale in Florence through the kindness of Mrs Zelia Nuttall, to whom I wish to express my sincere thanks. Mrs Nuttall discovered this important manuscript in the library and intends to publish it.

VENUS PERIOD IN THE PICTURE WRITINGS OF THE BORGIAN CODEX GROUP

BY

EDUARD SELER

VENUS PERIOD IN THE PICTURE WRITINGS OF THE BORGIAN CODEX GROUP[a]

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In chapter 82 of the Crónica Mexicana of Tezozomoc the account of the formalities observed at the election of Motecuhzoma Xocoyotzin as king of Mexico contains also the purport of the speeches addressed to the newly elected king. He is exhorted therein to receive graciously the tributary vassals when they come to the capital and to provide them with all that is necessary for their homeward journey. He is admonished to be valiant against enemies, but also to employ diplomacy, adulation, and gifts in order to bring them to submission by peaceable means. He should endow the temple and give sustenance to the old people, both men and women. He ought, above all things, to stand well with the nobility, be mindful of their privileges, and daily invite them to be his guests; for his authority and power depend on them. At the beginning of a long series of admonitions, which enjoin upon him to be careful in the observance of religious ceremonies, faithful in regard to priestly castigations, and to the care of the temples, the sacred places, and the roads leading to them, he is admonished " especially to make it his duty to rise at midnight (and to look at the stars) : at yohualitqui mamalhuaztli, as they call ' the keys of Saint Peter' among the stars in the firmament, at the citlaltlachtli, the north and its wheel, at the tianquiztli, the Pleiades, and at the colotl ixayac, the constellation of the Scorpion, which mark the four cardinal points in the sky. Toward morning he must also carefully observe the constellation xonecuilli, the ' cross of Saint Jacob ', which appears in the southern sky in the direction of India and China; and he must carefully observe the morning star, which appears at dawn and is called tlauizcalpan teuctli ".

These words contain data regarding the scope and the principal elements of ancient Mexican astronomy which are exactly confirmed by Sahagun in his account, in the seventh book of his historic work, of the constellations observed by the ancient Mexicans. In the original Mexican text of this work, which is preserved in the Biblioteca del Palacio at Madrid, the different celestial bodies and constellations mentioned in the text are also represented by pictures in the respective chapters. Pictures are given of tonatiuh, the " sun " (*a*, figure 92) ; of metztli, the " moon " (*b*, same figure) ; of citlalpol, the morning star, the planet " Venus ", *c;* of citlalpopoca, the " comet ", *d*, and of the star which the Mexicans called citlaltlamina, the " shooting star ", *e*. Among these, finally, are five constellations, of which three—mamalhuaztli, *f;* xonecuilli, *i;* and colotl, *k*—are marked by the accompanying names as corresponding to three of the above-named constellations, while the other two, *g* and *h*, prove by their form and design to be representations of the others named above, the constellation of the Pleiades and the " star ball ground ", the citlaltlachtli.

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[a] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte, 1898, pp. 346 to 383.

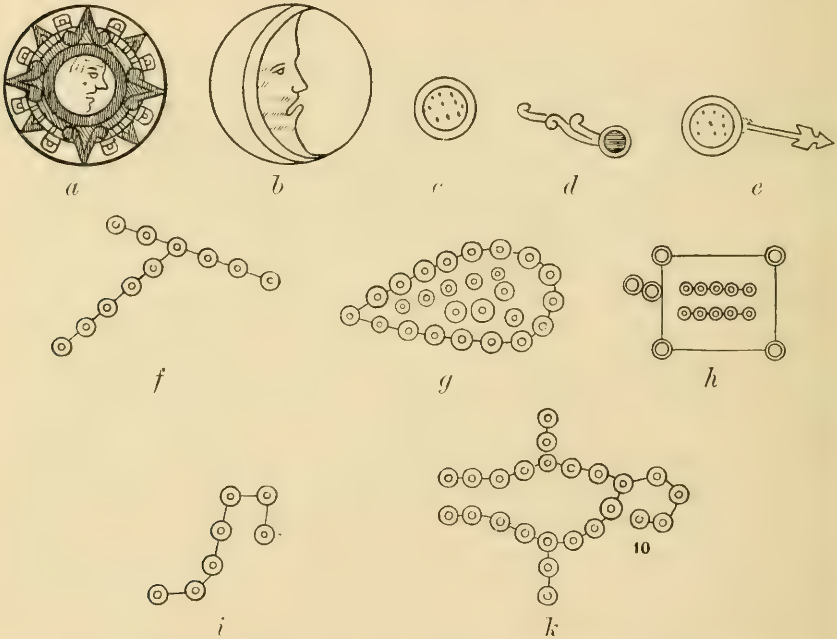

FIG. 92. Mexican figures of the sun, moon, and certain stars and constellations.

That marked *f*, mamalhuaztli, the " fire drill ", the " fire sticks ", is designated by Tezozomoc as the " keys of Saint Peter ". It must be a constellation in which two rows of stars meet at an acute angle. In Molina, mamalhuaztli is translated " astillejos (sticks of wood) constelacion ". Sahagun designates the constellation as " the wands of the sky, which are near the Pleiades, a group of stars in Taurus " (los mastelejos del cielo que andan cerca de las cabrillas, que es el signo del toro). Gemini of the zodiac are called " astillejos " (sticks of wood) in Spanish. These stars, however, seem out of the question here, since they lie too far distant from the Pleiades. The translation "astillejos" is probably intended to convey only the literal sense of the word mamalhuaztli. When Tezozomoc calls the constellation mamalhuaztli the "keys of Saint Peter", the editor, José Maria Vigil, observes that in the Middle Ages Aries of the zodiac was assigned to the Apostle Peter, and α of Aries was called the "keys of Saint Peter". The form of the constellation which the Mexicans represented by *f* would be produced by the union of c of Musca and α and β of Aries with δ of Aries. In any case, mamalhuaztli could only have been a constellation situated somewhere below 20° north latitude, since it rose at a point due east from the Mexicans, denoting for them the cardinal point east. Hence it was called youal itqui, "the bringer of the night" (Tezozomoc), or youal tecutli, "the lord of the night" (Sahagun). When it rose in the east they burned incense and said: Oualuetz in youaltecutli in yacauiztli: Quen uetziz in youalli, quen tlathuiz, "The lord of the night is come, the pointed staff. How will the night end? How will the morning dawn?" They burned incense three times, the second time at midnight, when the constellation reached the zenith, and toward morning, when it set.

The neighboring Pleiades, which were named by the Mexicans miec, "heap", or tianquiztli, "market", could have had the same significance as the mamalhuaztli. The former constellation, lying below 23° north latitude, might also have marked the east for the Mexicans. It is probable, however, that it served to mark the fifth cardinal point, the center, or the zenith. At the beginning of a new period of 52 years fire[a] was newly kindled when the Pleiades were in the zenith at midnight. The flaming up of this fire was a sign to the anxious waiting multitude that the world was not, as they feared, to be swallowed up in darkness, but that a new era would be granted to mankind.

It is my opinion that *g* from the Sahagun manuscript is citlaltlachtli, "star ball ground". Tezozomoc calls it "the north and its wheel" (el norte y su rueda). This can hardly denote any other constellation than the stars which circle about the polar star. It might denote Ursa Major, though the manner in which we are accustomed to represent this constellation, which unites stars of the greatest brilliancy, bears very little resemblance to the figure of the Sahagun manuscript.

Colotl, "the scorpion", *k*, or colotl ixayac, "the scorpion face", as Tezozomoc calls the constellation, must have been a group of stars diametrically opposite to the mamalhuaztli, situated likewise somewhere below 20° north latitude. Perhaps it was Arcturus. It marked the cardinal point west for the Mexicans. Sahagun says that in some regions the constellation was called "the wagon"; that the Mexicans called it "scorpion" because it had the shape of that animal; and that it bore this name in many parts of the world. This last remark of Father Sahagun seems to indicate that he identified it with Scorpio, of ancient astronomy. This would imply one of the most remarkable coincidences in the nomenclature. I do not consider this supposition admissible, since Scorpio of the ancients was situated far to the south—from 20° to 40° south latitude.

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[a] Sahagun, book 4, appendix. Edit. Bustamante, v. 1, p. 346.

Xonecuilli, or citlalxonecuilli, the curved S-shaped constellation, is clearly described by Tezozomoc as the Southern Cross. Its form can be recognized approximately in the design *i*, from the Sahagun manuscript, if Centaurus and the two stars lying to the east of the latter are added. Sahagun calls it the "constellation which stands in the mouth of the trumpet" (las estrellas que estan en la boca de la bocina). According to the lexicon it appears that the constellation of the Little Bear was called "trumpet" (bocina) in Spanish. Sahagun, however, can hardly have meant this, for it follows from the whole arrangement, which he also adopted, that a constellation of the southern sky is here referred to.

These four or five constellations were of importance to the Mexicans and were observed by them because they marked for them the four cardinal points, and the plans of their temples and cities had to be regulated by these points. A great number of religious rites were also determined by the four points of the compass.

There were also some stars that attracted the attention of the Mexicans on account of their brilliancy and their movements, to which they ascribed mysterious influences on the universe and mankind. These stars were worshipped as divine forces, and hence their appearance and movements were observed with great care. Such was the planet Venus, which the Mexicans called citlalpol, or uei citlalin, that is, "the great star", and Tlauizcalpan tecutli, "lord of the dawn", and whose alternate appearance as morning and evening star was well known to them.

The Augustinian monk Padre Jerónimo Roman y Zamora relates of the Mexican tribes settled on the borders of the Zapotec and Mixtec country that they paid great reverence to the morning star and kept an accurate record of its appearance. Y tan gran cuenta tenian con el dia que aparecia y quando se ascondia que nunca erravan ("So accurately did they keep the record of the days when it appeared and disappeared that they never made a mistake"). The like is said in a chapter devoted to this planet in a manuscript that belonged to the deceased Don Joaquin Garcia Icazbalceta, which was inserted at the end of the first part of Padre Motolinia's Historia, and which was therefore ascribed to Motolinia by Chavero.[a] Padre Sahagun tells us that when the planet reappeared on the horizon it was said to go down four times before it returned in its full splendor, shining like the moon. When the morning star rose, says the same author, they stopped up the chimneys and smoke vents, so that no harm of any kind should enter the house with its light; but it was sometimes regarded as propitious (according to the time in which it appeared in the east).[b] In the court of the great temple in Mexico there was a high and massive column covered with a thatched roof. This was called ilhuicatitlan, "in the sky". The picture of the morning star was painted on this pillar, and prisoners were sacrificed before it when the planet reappeared in the sky.[c] Father Roman relates of the people of Tehuacan, Coscatlan, and Teotitlan del camino that on the day when the morning star appeared for the first time a human offering was sacrificed, which the king of the land had to provide, and that on each day at the hour when this star rose it was the duty of the priests to burn incense and to draw their own blood, which they offered up to it. As observation of the stars was the duty of the priests, the morning star, it seems, was even regarded as connected with the deity who was considered the first priest and the inventor of every art, of art handicrafts as well as of the special sacerdotal art and science, of the calendar and the soothsaying art, with Quetzalcoatl, the hero of Tula, the king and lord of the Toltecs. When Quetzalcoatl, so runs the legend, driven from his kingdom by the artifices of the "magician" Tezcatlipoca, journeyed eastward and came to the seacoast, into the tlillan tlapallan, "the land of the black and red colors", that is, the land of writing or the land of the good example,[d] into the tlatlayan, "the place of burning", he donned his ornaments, the feather ornament (quetzalapanecayotl), and the mask of turquoise mosiac (xiuhxayacatl), as the dead were arrayed in the ornament and mask on the funeral pile, and cremated himself. The ashes immediately flew upward and were metamorphosed into birds of all kinds having brilliant plumage—spoonbills (tlauhquechol), cotingas (xiuhtototl), tzinitzcan, ayoquan, green parrots (toznene), red macaws (alo), and other parrots (cocho). When the ashes were scattered the heart also flew upward and, reaching heaven, transformed itself into the morning star. "They said that Quetzalcoatl died when the star became visible, and henceforward they called him lord of the dawn (Tlauizcalpan tecutli). They said that when he died he was invisible for four days; they said he wandered in the underworld, and for four days more he was bone (dead, or emaciated?). Not until eight days were past did the great star (the morning star) appear. They said that Quetzalcoatl then ascended the throne as god ".[a]

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[a] Anales del Museo Nacional de México, v. 2, p. 339.

[b] Sahagun, v. 7, chap. 3

[c] Sahagun, v. 2, appendix. Edit. Bustamante, v. 1, p. 205.

[d] See Anales de Chimalpahin ed. Rémi Siméon, p. 29: Yn iuh ymamatlacuilolpan in tliltica tlapaltica quicuilotehuaque ("As they have painted (written) in their picture writings with red and black colors"); and Vocabulario de Molina: tlilli tlapalli nictlalia, "dar buen exemplo (to give a good example)".

This death of Quetzalcoatl is said to have occurred in the year "1 reed" (ce Acatl). Hence the divinity of the morning star was also called Ce Acatl, and was hieroglyphically designated by the numeral 1 and the day sign Acatl, "reed".

We see the divinity of the morning star depicted with this name and this hieroglyph in the tonalamatl, the calendar of 13×20 days. He is there the lord of the ninth divison of 13 days, beginning with ce Coatl, "1 serpent", and is represented opposite the fire god; for the latter is the old god, Ueueteotl, who already existed in the period of twilight when as yet no sun illumined the world.

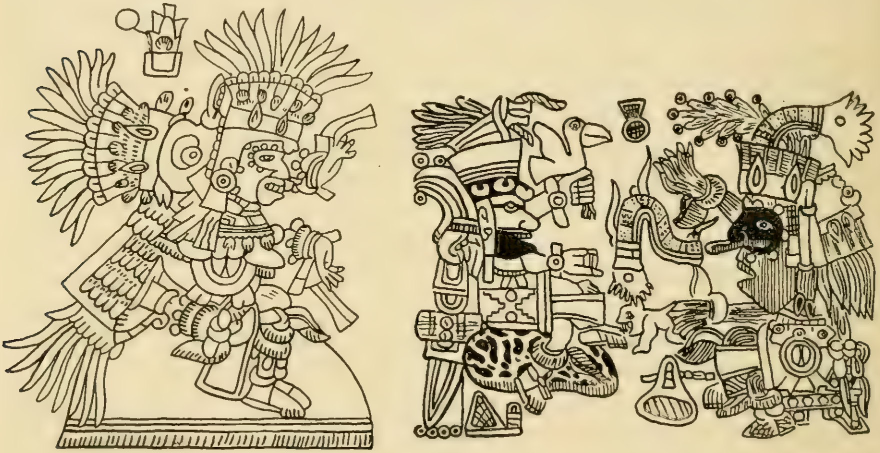
a *b*

FIG. 93. God of the morning star and fire god, Mexican.

The picture of Tlauizcalpan tecutli, the divinity of the morning star, as he is represented in the tonalamatl of Codices Telleriano-Remensis and Vaticanus A is given in *a*, figure 93. The white body with red longitudinal stripes, and with the deep black painting about the eyes, like a domino mask, which is bordered here, but not always, by small white circles and is combined with a red painting about the lips, which likewise may be omitted, are characteristic marks of this god.

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[a] Anales de Quauhtitlan, printed in the appendix to v. 3 of the Anales del Museo Nacional de México. I regret to say that I have not been able to examine this important manuscript. It seems to have disappeared. The copy in the Anales del Museo Nacional de México is very incorrect. In the passage in question, I have changed the obviously corrupt and unintelligible "campa huilhuitl yn amo nez quitoaya ycua mictlan nemito" into "ca nahuilhuitl", for the words following, auh no nahuilhuitl momitl ("and for four more days he was bone"), demand a preceding nahuilhuitl.

The red stripes on a white ground are only a variant of white, a conventional mode of representing a white color of the body; for, as we shall see, the god is also painted entirely white, and vice versa we find deities for whose bodies a white color is expressly prescribed in the text, like the Ciuateteo, represented with red longitudinal stripes on a white ground. The technical name is motizauauana, "longitudinal stripes made with white infusorial earth". This white color of the body is evidently meant to represent faint light, the light of the dawn, or a radiance like that of the moon. The Mexicans employed brilliant red and yellow to express bright light, the glare of the sun or the glow of the fire. The sun god and the fire god were painted in these colors but differently: in one manuscript the sun god is red and the fire god yellow, in another the sun god is yellow and the fire god red.

The black dominolike painting bordered by small white circles about the eyes Tlauizcalpan tecutli shares with Mixcoatl-Camaxtli, the hunting god and god of the Tlaxcaltecs; with Painal, the messenger of death, the image and representative of Uitzilopochtli; with Atlaua, the god of the Chinampanecs; and with those gods who, like the latter, have death symbols and were mentioned by Sahagun under the name of Chachalmecs. In the technical description of the decoration of these gods this painting is designated as mixquauhcal ichiuhticac, ixuacal ichiualê, or mixtetlilcomolo ("he has a cage painted on his face", "a furrow is made with black paint around the eyelids"), also as ixcitlal ichiualê, mizcitlal ichichiuh, or mixcitlalhuiticac moteneua tlayoalli ("on his face he has the star painting called darkness"). From this it follows that this painting is intended to reproduce the customary representation of night, which was painted as a dark field studded with eyes (stars). The deity is characterized thereby as a nocturnal one, appearing in the night sky.

The crown of black feathers with light tips, which is adorned with balls of white down (iztac totoliuitl), and from which in this picture a tuft of green quetzal feathers projects, is also a characteristic mark of this god; characteristic likewise is the headband, which has two pointed ovate white objects with red centers affixed to it in the same places in which the headband of the sun god has blue or green disks (of turquoise or a precious green stone).

It is worthy of note how in this picture the artist has expressed the fact that the god is known in two different forms. The face, decorated with headband and feather crown, looks forth from the gaping jaws of a skull, which has the same headband and feather crown. I think we may accept it as beyond question that the human face is intended to represent the star as it appears in the eastern sky above the rising sun, while the skull mask, on the other hand, represents the star which, hurrying after the setting sun, as the Mexicans imagined, descends into the earth, the underworld.

The breast ornament is also significant. It is a white ring, supposed perhaps to be made from a mussel shell, with which, besides this god, not only the god Tezcatlipoca in particular, but also Uitzilopochtli and his image, Painal, are ornamented. In the technical description this ornament is designated in the case of the latter god as "his golden ring" (iteocuitlaanauauh), or "his breast mirror" (eltezcatl).

The same elements as those in the figure described above are found in the picture of the Tonalamatl of the Aubin-Goupil collection placed at the ninth division (*b*, figure 93). Here, on the left, is the fire god, and opposite to him, on the right side of the picture, is Tlauizcalpan tecutli, the divinity of the morning star. The striped white painting of the body, the black dominolike painting around the eyes bordered with small white circles, the headband with the two pointed ovate white objects affixed to it, the crown of dark feathers, and the ring worn as a breast ornament are to be seen. Only, here, instead of the quetzal feathers, water and fire (atl tlachinolli), symbolic of war, project from the feather crown, and the skull mask hangs down at the back of the headdress. Instead of the hieroglyph ce Acatl, "1 reed", there is only the figure of a blazing star in the middle of the picture. Under it there are some other special symbols: the sign of fire, an animal resembling a dog (xolotl), and the bag (matlauacalli) and arrow of the hunting god.

The pictures which accompany the ninth section in the tonalamatl of the Borgian codex and Codex Vaticanus B are somewhat different. In the picture of the Borgian codex (*a*, figure 94) the morning star is on the left side confronting the fire god, who occupies the right side of the picture. The former is all white, not white with red stripes, and has the deep black dominolike painting around the eyes, but lacks the border of small white circles. The headband and feather crown are the same as to their elements as those in *a* and *b*, figure 93, except that here two bands terminating in balls of down project on either side. The god wears as a breast ornament, not the ring, but a broad rectangular plate, painted blue, which is probably meant to represent turquoise mosaic. He wears a nose peg of the same form as those usual in the pictures of Tezcatlipoca.

In the corresponding picture of Codex Vaticanus B (*b*, figure 94) the morning star is represented on the right side. He is striped white and red, has the same dominolike painting around the eyes, and wears the ring as a breast ornament, and also Tezcatlipoca's nose peg. The same elements are to be distinguished in the headband and feather crown, despite the somewhat uncertain drawing, as in the corresponding articles of dress of the other figures, except that here a large bunch of quetzal feathers droops from the crown. A similar ornament is displayed on a number of other deities in this manuscript.

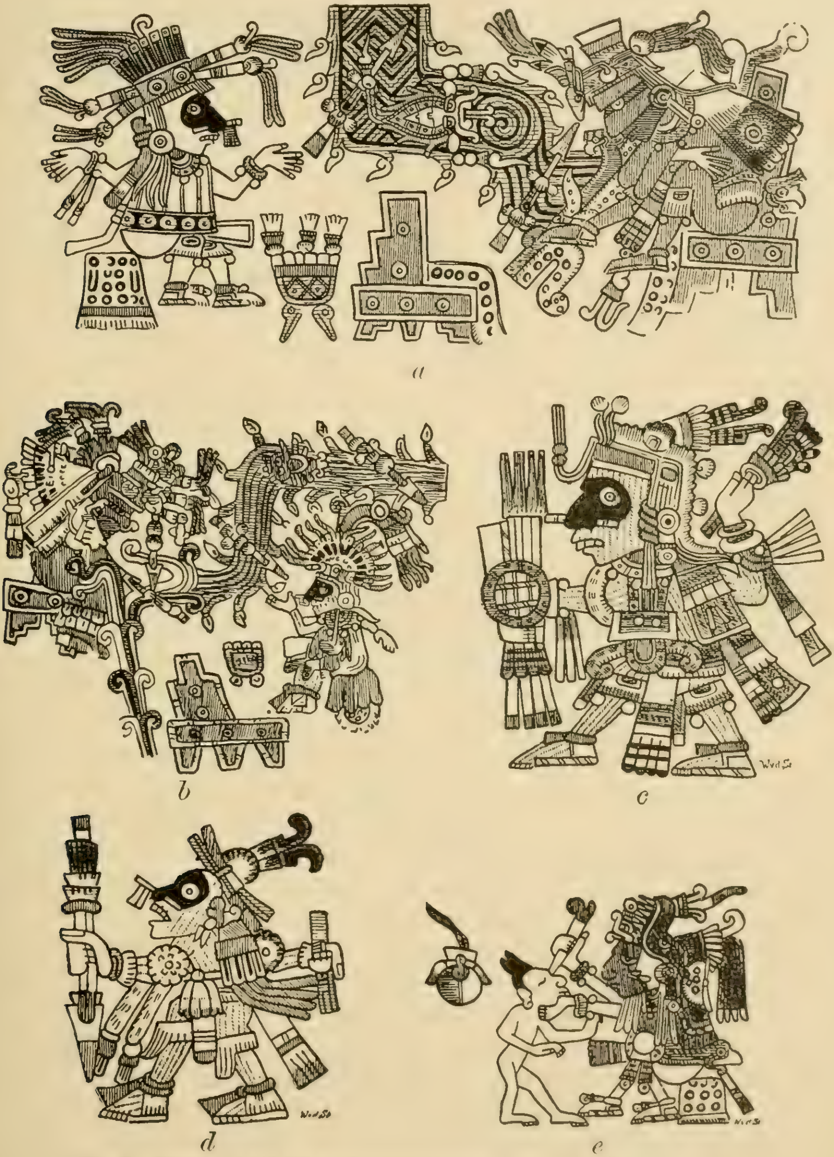

FIG. 94. Figures of the fire god and other deities, from the Mexican codices.

The statements made by the historians regarding the exactness with which the ancient Mexicans observed the appearance and reappearance of the planet Venus have recently received surprising corroboration through Förstemann's researches respecting the Maya manuscript of the Royal Public Library at Dresden. As Förstemann has proved in his elucidation of this manuscript published in the year 1886 the apparent revolution of Venus, which is made in 584 days (exactly, 583 days and 22 hours), is represented five times in succession on the remarkable pages 46 to 50, and each time divided into periods of 90, 250, 8, and 236 days. These 90, 250, 8, and 236 days are specified on each of the pages by days named according to the tonalamatl system having these intervals between them, by month dates, and lastly by rows of numerals. Förstemann's hypothesis is that thereby the 90 days are reckoned as the period of the planet's invisibility during its superior conjunction, the 250 days as the period of its appearance in eastern elongation (as the evening star), the 8 days as the period of its invisibility during inferior conjunction, and the 236 days as the period of its visibility in western elongation (as the morning star). The difference between the period of invisibility during inferior and superior conjunctions is explained by the fact that in superior conjunction Venus passes behind the sun; hence, owing to the parallel movement of the two heavenly bodies, a far longer period is required than in inferior conjunction. Under the assumption that the planet is invisible during the entire period in which it is distant less than 10 degrees from the sun, Förstemann computed the duration of its invisibility in inferior conjunction at about 12 days, in superior conjunction at from 77 to 80 days. He goes on to say that at the time of superior conjunction Venus is seven times farther away from the earth than at the time of inferior conjunction, and the remoteness from the time of its greatest brilliancy is also much greater than at the latter period; hence it would be necessary to allow more than 10 degrees distance from the sun for it to be again clearly visible. Thus the assumption of 90 days for its invisibility during superior conjunction would be warranted. The assumption of 8 days for its invisibilty during inferior conjunction, which is shorter by 4 days than the computed period of invisibility, Förstemann believes can be defended by reference to the clear sky of Yucatan and the sudden coming on of night. The difference in the periods of visibility, which are generally accepted as 243 days each, but need not, of course, be exactly equal, Förstemann says he is unable to explain more definitely.

Let me say at the outset that I have not yet found these detailed accounts of the periods of visibility and invisibility specified in Mexican picture writings, but the passage from the Anales de Quauhtitlan, which I translated above, contains the definite statement of a period of 8 days from the time of the planet's disappearance as the evening star until it appears as the morning star. At the time when the planet (as the evening star) was visible in the sky Quetzalcoatl died (yn yuh quitoa yn icuac necico yn mic Quetzalcoatl). And when Quetzalcoatl was dead he was not seen for 4 days; they said that then he dwelt in the underworld, and for 4 more days he was bone (that is, he was emaciated, he was weak); not until 8 days had passed did the great star appear (ye chicueylhuitica yn necico huey citlalli), that is, as the morning star. They said that then Quetzalcoatl ascended the throne as god (yn quitoaya Quetzalcoatl quitoa ya ycuac moteuhtlali).

Even though it has not yet been possible to prove that periods of visibility and invisibility are given in detail in the Mexican picture manuscripts, the total outcome of pages 46 to 50 of the Dresden manuscript, the apparent revolution in 584 days five times repeated and these five revolutions repeated thirteen times, is distinctly set down on certain pages of the Borgian codex group and, moreover, the pictures which accompany the dates and series of numerals on pages 46 to 50 of the Dresden manuscript have their parallels on the same pages of the picture manuscript of the Borgian codex group. The Venus period is, generally speaking, the leitmotif for a large number of the pages of these manuscripts.

In the 584 days which constitute the period of the apparent revolution of Venus the tonalamatl of 260 days is contained twice, with a remainder of 64 days. It follows, therefore, that if one Venus period begins at the first of the twenty day signs, the beginnings of the following Venus periods fall on the fifth, ninth, thirteenth, and seventeenth signs, and the initial day of the sixth Venus period is again designated by the same sign as that of the first; but the numeral joined with the sign of the initial day of the sixth period is not the same as that of the initial day of the first. In other words, but five of the twenty signs, which form the basis of the tonalamatl, fall on the initial days of the successive Venus periods. This important fact explains, first and foremost, as it seems to me, the familiar arrangement of the tonalamatl in columns of five signs each. We see this arrangement carried out in detail in the tonalamatl at the beginning of each of the three picture writings of our group: the Borgian, Vaticanus B (no. 3773 of the inventory), and Bologna codices. It is also implied on many other pages of these manuscripts and in a large majority of the representations of the Maya manuscripts. This important fact explains, above all, why five successive Venus periods have been grouped together as a unit, as on pages 46 to 50 of the Dresden manuscript. In view of this fact it should be considered as in a manner merely accidental that this period of five Venus periods was exactly equal to 8 solar years, reckoning each solar year at 365 days. If this period of five Venus periods occurs in thirteen repetitions on the same pages 46 to 50 of the Dresden manuscript, this is indeed quite sufficiently and, in my opinion, solely to be explained by the notation of days furnished by the tonalamatl. The great period obtained in this way, which consisted of 13×5 revolutions of Venus, possessed this peculiarity, that after its expiration the initial day of the Venus period again received the same sign and the same numeral. This great period corresponded, therefore, in its nature to the cycle of 52 solar years, which had the same characteristic. It should again be considered as in some degree merely accidental that this period of 13×5 Venus periods was also equal to 13×8 or 2×52 solar years.

A period of five Venus periods is recorded distinctly, though the details of the computation are not given, on page 25 of the Borgian codex (Kingsborough, page 14), which corresponds to page 70, Codex Vaticanus B (Kingsborough, page 27). There are four large figures of gods placed in the four corners of the page. Accompanying them are the twenty day signs, peculiarly disposed to convey the idea of rotation in a direction opposite to that of the hands of a clock. In the middle of the page, enlarged and inclosed in a square field of its own, is the seventeenth day sign Olin, " movement ", and beside it are twice five dots, which together represent the numeral 10.[a]

The first day sign, Cipactli, is placed beside a figure, which is reproduced in *c* (from the Borgian codex) and *d* (from Codex Vaticanus B), figure 94. We readily recognize the striped white body coloring and the deep black painting, like a domino, around the eyes, just as they have become familiar to us, of Tlauizcalpan tecutli, the divinity of the morning star. Here, however, he wears, instead of the crown of dark feathers, a wig of white down, and on it a tuft from which two dark eagle feathers project. In *c* (figure 94), he wears as a breast ornament a plate like that which we saw in *a* (same figure). Both representations *c* and *d*, like the others on this page, hold a spear thrower and a bundle of spears in their hands. We are forced to recognize the divinity of the morning star in this figure. The god may, however, here have special form, be represented in a special rôle. Now if the fact that the morning star occupies the first place among the four figures gives rise to the supposition that this page refers to a period of time which is measured by the movements of the morning star, this supposition becomes a certainty by reason of the large and conspicuous date which occupies the middle of the page. For matlactli Ollin, " 10 movement ", is precisely the day with which the fifth period of 584 days must begin if the first began with ce Cipactli, " 1 crocodile ", the initial day of the tonalamatl. It is therefore the five Venus periods that are intended to be represented on this page, and they are evidently meant to be assigned here to the five cardinal points. Tlauizcalpan tecutli, the lord of the morning dawn, as we have seen, officiates as regent of the first period. the one beginning with 1 Cipactli, which would therefore correspond to the east. In the second division, as indicated by the rotary movement, Xipe Totec, " our lord, the flayed one ", is represented. brandishing his rattle board (chicauaztli), as lord of the second period (beginning with 13 Coatl), which would correspond to the north: in the third period (beginning with 12 Atl), which must correspond to the west, is Tlaloc, the rain god; and in the fourth (beginning with 11 Acatl), belonging to the south, is a remarkable and rarely represented god that I formerly, but probably incorrectly, identified with Tepeyollotl, who has the bicolored, half red and half black, face painting of Quetzalcoatl, heavy beard and eyebrows, and a bundle of stone knives before his mouth. The fifth period is only designated by its initial date, 10 Ollin. The fifth cardinal point, the center, or direction from above downward, would belong to it. The name of the day may have been designation enough for it, since Olin, or more correctly tlal-olin, signified earthquake to the Mexicans.

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[a] The numeral 11 is incorrectly set down on the page of Codex Vaticanus. There is, besides, on this page, a reversal of the direction of the rotary movement indicated by the day signs, in that three day signs are there set down in order opposed to the general direction.

I think I am able also to recognize the Venus period in a series of very remarkable representations which occur in like manner in three manuscripts of this group—in the Borgian codex, on pages 15 to 17 (Kingsborough, pages 24 to 22), in Codex Vaticanus B, on the upper half of pages 33 to 42 (Kingsborough, pages 81 to 90), and in the Fejérváry codex (Kingsborough, pages 22 to 16). There are four rows of five gods each. The figures in each row are represented as engaged in the same act. The actions themselves I am forced to designate as symbolic representations of sacredotal functions.

In the first row the gods are each represented as boring out, with a pointed bone, the eye of a naked human figure standing before them (*e*, figure 94). This is a familiar symbol of priestly castigation, self-infliction of wounds and letting of blood in honor of the gods, which were the most usual religious acts among the Mexicans, and were necessary as a preparation for every serious undertaking.[a] The Mexicans called it nezoliztli, " to prick one's self "; nenacaztequiliztli nenenepiltequiliztli, " to make incisions in one's ear and tongue ".

In the second row the gods are offering a miniature representation of themselves with a gesture which unmistakably expresses giving, presenting (*a* to *d*, figure 95). This is doubtless a symbolic expression of tlacamictiliztli, " human sacrifice "; for at all feasts where human beings were sacrificed at least one of the victims was painted and dressed in precisely the same manner as the idol to whom the feast was given, and was offered to the idol as its own image.

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[a] In my treatise on the Tonalamatl of the Aubin collection (Comptes rendus du Congrès International des Américanistes, Berlin, 1888) I have spoken in different places (pp. 548 and 689) in regard to this boring out of the eye as a symbol of castigation and bloodletting. The strongest proof is obtained by comparing the homologous representations in Codex Telleriano-Remensis II, pp. 26, 27, (seventeenth tonalamatl division, ce Atl, " 1 water ") and the Borgian codex, p. 10 (Kingsborough, p. 29), above on the right (eighteenth day sign, Tecpatl, " flint ").

The representations in the third row are more difficult to explain. The gods are depicted here with a naked human form kneeling or lying before each one—one figure of the Codex Vaticanus is represented with his breast cut open, lying directly on the sacrificial stone—from whose body they draw a yellow strip with wavy outlines that ends in flowers, precious stones, and straps with bells (*e* and *f*). This strip begins at the abdomen, so that it looks very much as if the intestines were being drawn from the body of the figure. This did indeed occur among certain tribes as an act of torture or sacrifice, as can be gathered from a few passages, but it was by no means a universal religious ceremony. On the other hand, the color of this strip,

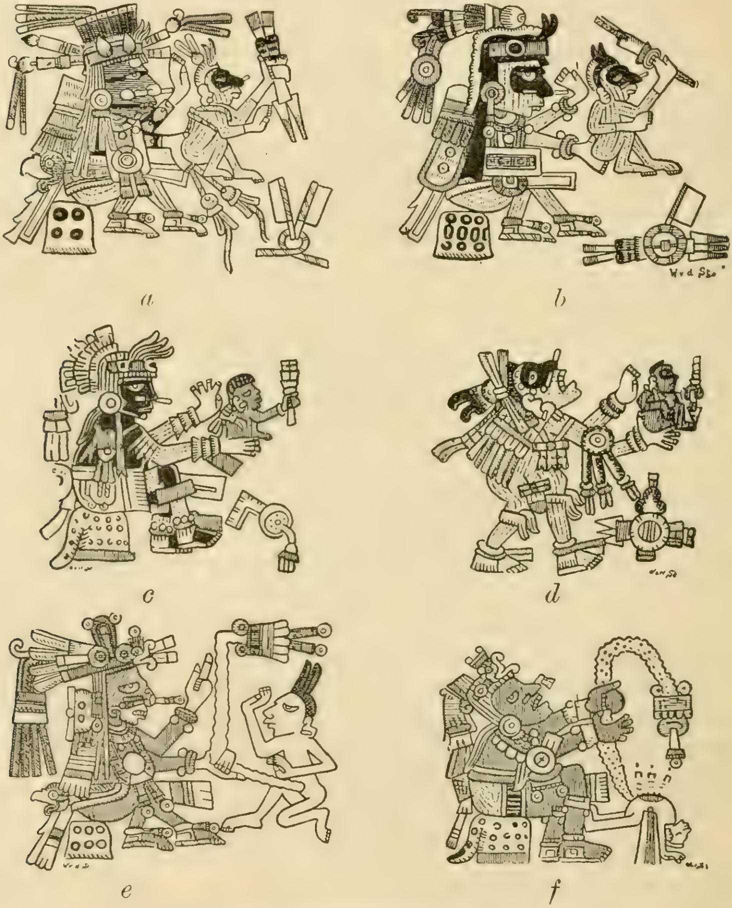

FIG. 95. Figures of supposed deities, Mexican codices.

which is yellow, in the Codex Vaticanus even dotted yellow and red, and the wavy outlines forcibly recall the manner in which the skin flayed from a human being, Xipe's usual attire, is commonly represented in the picture writings. Since Xipe Totec is placed among the five gods of this particular row, I am convinced that the act of tearing off the strip is meant to represent the tlacaxipeualiztli, "flaying of the victim", which was customary at the feast of Xipe Totec and also at the feasts of the earth goddess.

In the fourth row five female divinities are represented as offering the breast to a naked human form (*a*, figure 96). I believe that this row is intended to represent the "nourishing" of the gods, the tlatlatlaqualiliztli, which was the concluding act of the sacrifice, and consisted in moistening the mouths of the idols with the blood of the victims by means of a strip of paper or a rod dipped in the blood, which had been caught in a bowl.

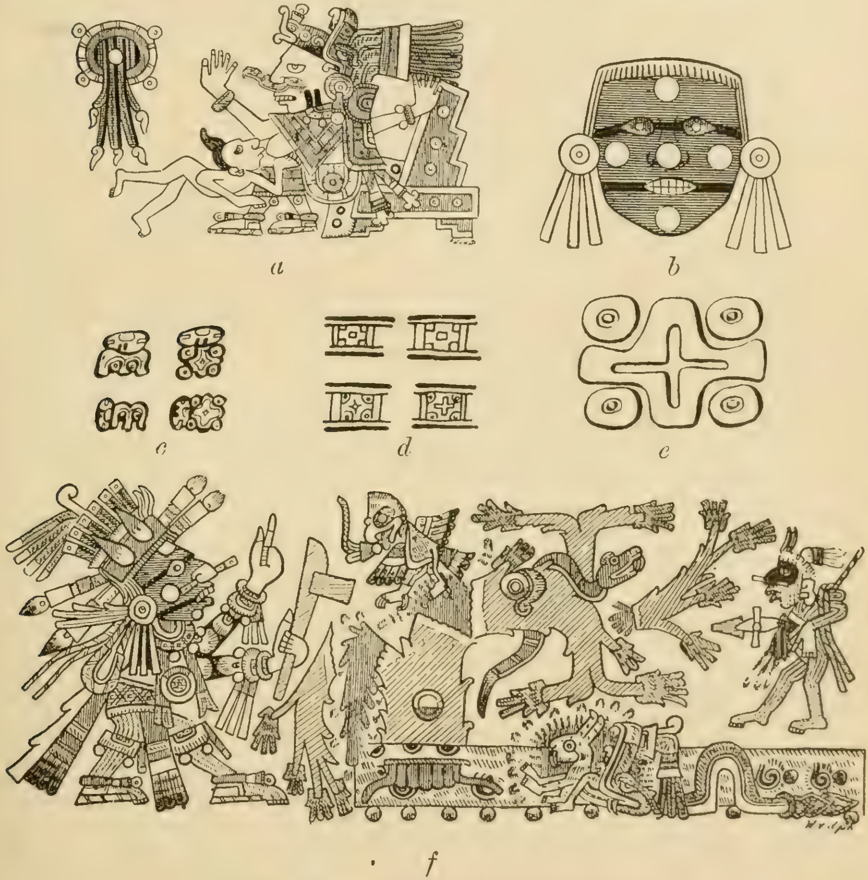

Fig. 96. Mexican deities and Maya hieroglyphs.

All the figures of the four rows are accompanied by day signs, four with each figure, placed in the order in which they follow each other, so that eighty day signs in all, or the twenty day signs repeated four times, are set down on these pages. Eighty days have no distinguishable direct significance as a division of time. They denote a definite division neither of the tonalamatl, nor of the year, nor of any other of the usual periods of time. For 80 days before the principal feast the priests fasted and scourged themselves. To fast 4 days was the common practice, and it was the custom to fast full 20 days on especially solemn occasions or for especially urgent reasons; but the priests, whose calling obliged them to perform more than was required of ordinary mortals, fasted 4×20 days. I do not believe, however, that such questions have any connection whatever with these pages. On the other hand, it is significant that the rows are always composed of five figures. So are the first signs which accompany the figures, which are always the following five: Cipactli, "alligator"; Coatl, "serpent"; Atl, "water"; Acatl, "reed"; Ollin, "movement".

These are precisely the signs which fall on the initial days of the Venus periods when the first period begins with the initial sign of the tonalamatl, Cipactli. I believe it is intended here to designate the initial days of the Venus periods, and that the three other signs which, in addition to these initial signs, are placed beside the figures serve merely to connect one initial sign with the other, precisely as in the representation of the Venus periods immediately to be discussed; but as regards the ceremonies which are represented on these pages, and which I have explained more fully above, I believe that they all refer to the initial day of the Venus period.

We have seen that the first appearance of the planet Venus in the (eastern) sky was celebrated with solemn human sacrifices in Mexico and especially among the tribes on the borders of another linguistic territory, the people of Tehuacan, Coscatlan, and Teotitlan del camino, among whom this star was held in special veneration. What I see represented on these pages is the regents of twenty Venus periods, or, perhaps, more correctly, four regents for each of five successive Venus periods, and the religious ceremonies which were devoted to them at the beginning of the period.

Within each of the four rows of regents we must, I think, assume an arrangement coinciding with the five cardinal points. In the middle of the rows, in the third place, stands always either the death god or (in the third row) Tezcatlipoca, with bandaged eyes, who is to be regarded as the god of the earth or of the interior of the earth. These figures, I think, should be regarded as coinciding with the fifth cardinal point, the region of the middle, or the downward direction. In what way the other figures are assigned to the cardinal points I will not venture to assert, because, according to the subject with which the particular representation was concerned, sometimes one and sometimes the other deity was assigned to a certain point, and it thus frequently happened that the same deity dominated sometimes one and sometimes another point of the compass.

I have still to discuss some figures that occur on these pages which are important for the principal representation to be explained below. They are *a*, *b*, *c*, and *d* of figure 95, given above. They occupy the fourth and fifth places in the second row; that is, in the row of gods who express the idea of human sacrifice by holding out a miniature image of themselves with a gesture expressive of giving. Thus, the rain god, who is in the second place, offers a miniature image of himself, painted black, with the familiar, characteristic, and easily recognizable face of Tlaloc. The death god holds out a small death god, who is identical in drawing and color with the larger figure. In the cases of *a* and *b*, figure 95, which occupy the fourth and fifth places in this row, it is remarkable that the image which they hold out is the same in both cases, and above all that it coincides with *b*, figure 95, which occupies the fifth place in the row. We shall have to conclude that *a* is the same god as *b*, likewise that *c* is the same god as *d*, and that *a* and *c* are only different manifestations of the divinity represented in *b* and *d*. Now, *b* and *d* are indentical with *c* and *d*, figure 94, given above; that is, they are pictures of the deity of the planet Venus, of the morning star, perhaps in his special rôle of hunting god and war god. Hence we must infer that *a* and *c*, figure 95, also represent the deity of the morning star. In fact, *a* has precisely the same headdress as the figure of Tlauizcalpan tecutli, who presides over the ninth section of the tonalamatl in the Borgian codex (see *a*, figure 94). The body coloring is also the same, and the breast ornament is the ring usually found in the representations of the deity of the morning star. The face painting alone is different, being black, with two deep black transverse stripes running across the face on a level, respectively, with the eyes and the corner of the mouth and with four round, white spots, as seen in the profile view, which in the front view must have been five white circles arranged in a quincunx (see *b*, figure 96). If we imagine this quincunx of white circles to be inclined about 45 degrees, I believe we have before us what Förstemann has proved to be the hieroglyph of the planet Venus in the Maya manuscripts (see *c* and *e*). Glyphs *a* and *c*, figure 95, seem to me to represent the divinity of the planet Venus, with the hieroglyph of that planet painted on his face. Now, as in *a* and *b*, figure 93, we found the deity of the morning star represented with a death's-head as a helmet mask, evidently expressing the other form, the disguise of this deity, the planet as the evening star; so we likewise find parallel figures to the figure painted with the hieroglyph of Venus, which represent the divinity with the same attributes and the same face painting, but with a death's-head instead of a human face (see *f*, figure 96, and *a*, figure 97, which are on the same superb page 19 of the Borgian codex, Kingsborough, page 20).

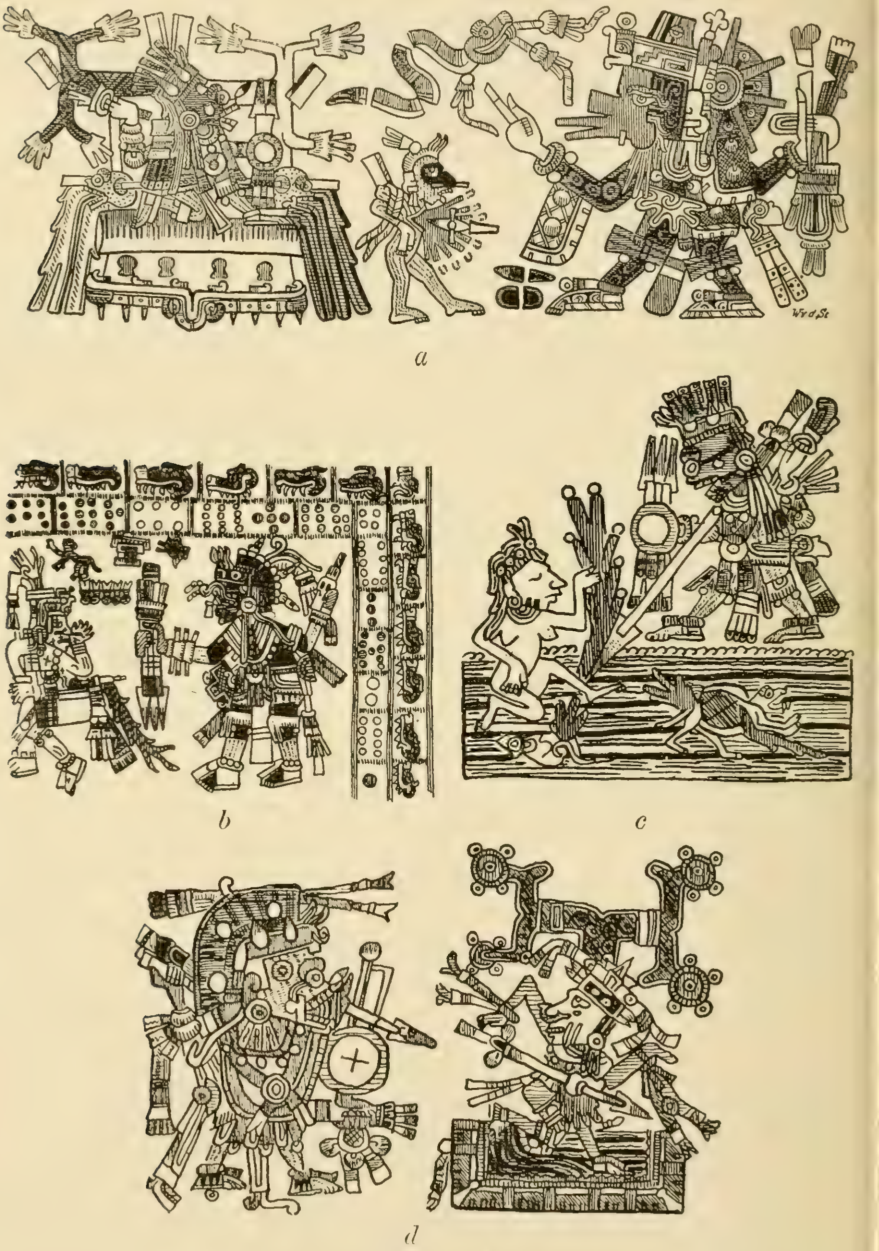

FIG. 97. Deity figures from Mexican codices.

After these introductory remarks, I can now pass to the principal representation, found on pages 53 and 54 of the Borgian codex (Kinsborough, pages 62 and 61), which correspond to pages 80 and 84 of Codex Vaticanus B (Kingsborough, pages 17 to 13) and the like place in the Bologna codex, pages 9 to 11.

On page 80 of the Vatican codex we see at the right a figure (*b*, figure 97) which the first glance proves is identical with *c*, figure 95, and must accordingly represent the deity of the planet Venus with the hieroglyph of that planet painted on the face. Under the eyes, however, a flourish is added which recalls the facial configuration of certain personages represented in the Maya manuscripts and also on pottery figures of Zapotec and Maya (Chiapanec, Guatemalan) origin. The quincunx of the face painting in this figure, and the same is true of *c*, figure 95, is not so correctly expressed as in the figures of the better executed Borgian codex. The deity holds a spear thrower and a bundle of spears in his hand. Before him are five circles like blazing stars, and opposite him is a divinity struck by a spear. Precisely the same deity of the planet Venus, holding spears and a spear thrower, occupies the right side of the other pages. The five blazing stars are repeated in a similar manner on the other four pages, except that they are painted blue on the second and fourth pages, as on the first page, but yellow on the third and fifth pages. On the other hand, the form struck by the spear is changed, its place on the other pages being filled partly by other divinities, partly by certain symbols.

I reproduce in *c*, figure 97, the figure which appears on the pages of the Borgian codex in the first of the five divisions. The deity of the planet Venus with the Venus hieroglyph painted on his face is again readily recognized, except that here he is represented with a death's-head, as in *a* (page 19 of the Borgian codex). Here, too, the divinity holds the spear thrower and bundle of spears and throws a spear at a figure kneeling before him. The five blazing stars are absent. In the other divisions the divinity is not in the Borgian codex repeated in exactly the same manner as it is in the Vatican codex. The body coloring varies: On the divinity of the first division it is white with stripes; on the others it is blue, red, yellow, and again white with stripes. In place of the characteristic face of the deity of the planet Venus there are heads of animals (vulture, dog, rabbit) in the three following divisions and in the last a white death's-head. Accessories, dress, and action are in general precisely the same as those of the first figure. The forms struck by the spear vary in the same way as in the Vatican codex, but the order is somewhat different.

I reproduce in *d* the group presented in the first division on the pages of the Bologna codex. The homology between this and the groups of the two other manuscripts is plain without further description. Here, in the first division, the principal figure is white with stripes; in the others it is green, yellow, brown, and blue. The forms struck by the spear correspond to those of the other manuscripts, but the order is here again somewhat different.

In *b* I have reproduced all the day signs which are to be seen with the figure of the first division, and which in the Borgian codex are set down in exactly the same way in the first division beside *c*. They are the sign Cipactli repeated thirteen times, with thirteen different numerals. In the second division we have the sign Coatl, "serpent", instead of Cipactli; in the third, Atl, "water"; in the fourth, Acatl, "reed"; and in the fifth, Ollin, "movement"; that is to say, the five signs, already named above, which fall on the initial days of the Venus periods when the first period begins with the first day of the tonalamatl. There are three other signs in the body of each page of the Borgian and Vatican codices, those which connect the respective sign with the next one of the five. In *b* the signs Ehecatl, "wind"; Calli, "house", and Cuetzpalin, "lizard", fill up the space between Cipactli and Coatl. The series of day signs accompanying the figures on the pages of the Bologna codex is somewhat differently formed. Here the twenty day signs are depicted, with their numerals, as they follow each other from the first day of the tonalamatl to the twentieth. The five signs, Cipactli, Coatl, Atl, Acatl, Ollin, however, are placed out of rank, as they are not drawn with the numerals belonging to them, but of larger size and with the numeral 1.

The dates set down on the five pages of the Vatican and Borgian codices by means of numerals and signs are as follows:

1	8	2	9	3	10	4	11	5	12	6	13	7	Cipactli, "alligator".
5	12	6	13	7	1	8	2	9	3	10	4	11	Coatl, "snake".
9	3	10	4	11	5	12	6	13	7	1	8	2	Atl, "water".
13	7	1	8	2	9	3	10	4	11	5	12	6	Acatl, "reed".
4	11	5	12	6	13	7	1	8	2	9	3	10	Ollin, "movement".

The above are the initial days of the 5×13 Venus periods which together make up the long period mentioned above after the expiration of which the initial day of the Venus period has again the same numeral and the same sign. This long period is equivalent to a double cycle of 2×52, or 104, solar years, and contains the tonalamatl 146 times. These initial days, however, are not set down here in their actual order of succession, but are rather tabulated as they would follow one another in the tonalamatl. The true order is:

1	9	4	12	7	2	10	5	13	8	3	11	6	Cipactli
13	8	3	11	6	1	9	4	12	7	2	10	5	Coatl
12	7	2	10	5	13	8	3	11	6	1	9	4	Atl
11	6	1	9	4	12	7	2	10	5	13	8	3	Acatl
10	5	13	8	3	11	6	1	9	4	12	7	2	Ollin

The same 13×5 Venus periods are recorded on pages 46 to 50 of the Dresden Maya manuscript, as I have already mentioned above. In the manuscripts of our group the periods are merely indicated by the initial dates, but in the Maya manuscript, in which the actual length of the period is calculated in detail, these days follow in their real order of succession. It is curious that not one of the initial dates given on page 46 of the Dresden manuscript consists of the numeral 1. On the other hand, in the place where, according to Förstemann's interpretation, the first day of the visibility of Venus as the morning star should be recorded, there is set down the date 13 Kan, or 13 Cuetzpalin according to the Mexican nomenclature. If we assume that this date is intended to denote, not the beginning of the planet's visibility, but rather the end of its invisibility, we should have on page 46 of the Dresden manuscript the day 1 Chicchan, or 1 Coatl in the Mexican nomenclature, specified as the day of its first appearance as the morning star. That this page is actually intended to express this idea I would infer from the fact that in the tonalamatl the picture of the morning star stands in the very division which begins with the day 1 Coatl.

On page 46 of the Dresden manuscript the period of the visibility of Venus as the morning star does not occupy the first place. The first date denotes instead, according to Förstemann's explanation, the beginning of the time when the morning star vanishes in the rays of the rising sun. This first recorded date is 3 Cib, or 3 Cozcaquauhtli in the Mexican nomenclature. If we assume here in turn that, not the beginning of the invisibility, but the end of the visibility is denoted by this date, then on this page of the Dresden manuscript we should have the day 4 Caban, or 4 Ollin, as the day on which the morning star is in conjunction with the sun. Since 4 Ollin, or naui Ollin, is considered a symbol of the sun, and this day falls in a tonalamatl division whose regent is Quetzalcoatl, the god identified with the morning star, I believe I have correctly interpreted hereby the meaning of this Maya page.

I find support for these interpretations in pages 71 and 72 of Codex Vaticanus B (Kingsborough, pages 26, 25). On the first of these two pages, which for a long time was unintelligible to me, the day 1 Coatl is represented rising from the jaws of the earth. Eight representations follow, which in a similar manner express three additional days joined with the numeral 1; but these appear to be only ornamental connecting or transitional members, since the fifth (the center) and the ninth (the end) are again the day 1 Coatl.

On page 72, however, nine other representations follow, figures of gods drinking pulque, which begin (below on the right) with the date naui Olin and the figure which is designated by this date also in the Vienna manuscript.

If even in the details of the dates similarities appear which connect the representations of the Maya manuscripts, apparently of such different character, with those of the Borgian codex group and the Mexican manuscripts in general, it will not seem surprising that analogies should also appear in the groups of figures. These are very apparent on pages 46 to 50 of the Dresden manuscript.

On these five pages of this manuscript we see, as in *b*, *c*, and *d*, figure 97, a figure armed with the spear thrower and bundle of spears, and under it, not opposite, another struck with a spear. The form armed with the spear thrower, and bundle of spears is not the deity of the morning star repeated five times, as in the representations of the manuscripts of the Borgian codex group, discussed above, but five different figures, respecting whose significance I shall have more to say later. The figures struck with the spear, on the other hand, are clearly the same as in the representations of the Borgian codex group, at least on the first three pages.

On the first page of the Borgian codex we see struck by the spear the goddess of water, the Mexican Chalchiuhtlicue, "in the water", *c;* in the Bologna codex the same, *d;* also in Codex Vaticanus (*a*, figure 98), but on the second, not the first, page, for the order here is not exactly the same as in the Borgian codex.

I reproduce in *b*, figure 98, in hieroglyph and full figure, the personage struck by the spear on page 46, the first of the pages connected herewith in the Dresden manuscript.[a] It is the same divinity as the one represented on page 25 of the Dresden manuscript as regent of the years beginning with Ben, or Acatl of the Mexican nomenclature, *f*, and on page 7, *d*, as the twelfth in the series of the twenty gods called god K by Schellhas. The face of this god is distinguished by a remarkably proliferous nose, and the hieroglyph represents a head shaped like that of an animal, with a projection on the forehead from which radiate two objects resembling tongues of flame. He is very frequently represented on the sculptures of Copan and Palenque (compare *h* and *i*, figure 98). The nose is not so strongly proliferous as in the manuscript, but in every case it curves upward. The projection on the forehead, with the two tongues of flame, is never absent. On its surface there are frequently two crossed rods (see *a* and *d*, figure 99), which are explained by Dieseldorff as fire drills, but which may have an astronomic significance. The god frequently has the sun sign, kin, on his brow. Professor Förstemann supposes that this figure is a storm deity, whose ornamental

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[a] The hieroglyphs of the figures struck by the spear are on the right side of the pages, directly below the hieroglyph of the deity hurling the spear. The figure struck by the spear is also indicated on the page directly preceding p. 46, p. 24, which in a certain measure is an epitome of pp. 46 to 50. The first of the two hieroglyphs, which I have given in *b*, fig. 98, is on p. 24, the second on p. 46.

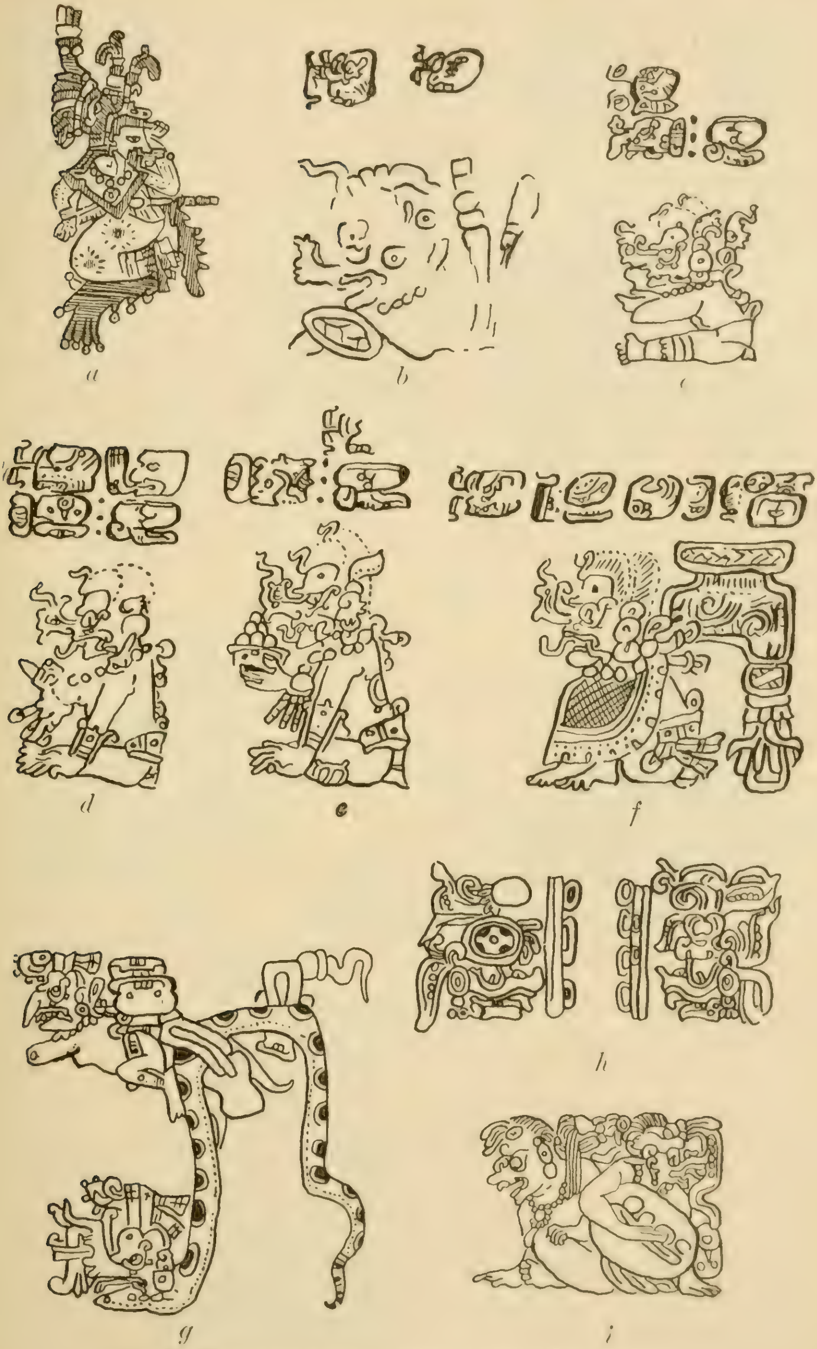

FIG. 98. Figures and glyphs of Ah-bolon tzacab, Maya codices.

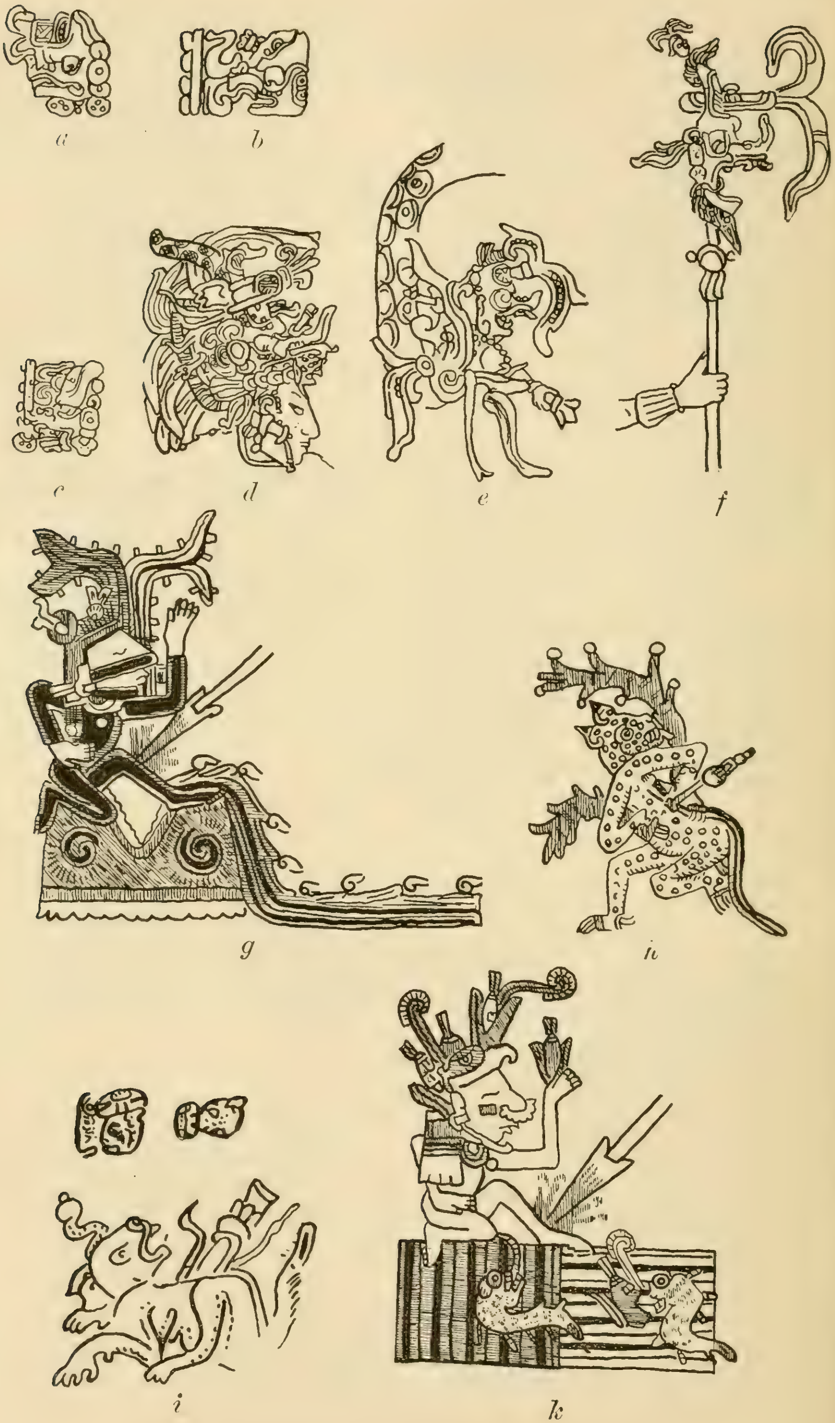
a
b
c
d
e
f
g
h
i
k

FIG. 99. Figures and symbols of Maya and Mexican deities.

nose represents the blowing of the storm in the conventional manner of the Central American peoples. Dieseldorff identifies him with Kukulcan the Quetzalcoatl of the Mexican races. I consider it to be almost beyond doubt that he represents the water deity. On the stelæ of Copan and in Menche he appears as a serpent (*d* and *e*, figure 99). In the Troano codex, page 26, he is the serpent on which Chac, the rain god, rides (*g*, figure 98). In the upper division of page 25 of the Dresden manuscript the rain god Chac, borne along by the dog-headed priest, officiates as his representative. He agrees generally with Chac, not in the nose indeed, which in the rain god curves downward and is large but plain, but in the whole shape of the face and in the long teeth hanging out, which appear like the teeth of Tlaloc metamorphosed, the head of which god forms his hieroglyph (*c*, figure 98) in one passage (page 3) of the Dresden manuscript. From his position as regent of the Ben, or Acatl, years, belonging to the region of the east, I believe that the Yucatec name Ah-Bolon tzacab, "lord of the nine generations", must be regarded as applying to him. As a matter of fact, his hieroglyph usually appears on the sculptures connected with the numeral 9, *h* and *i*, figure 98, and *b* and *c*, figure 99. In the hieroglyph *a*, figure 99, the anterior portion is destroyed.

In the Borgian codex, on the second of the pages devoted to this representation, Tezcatlipoca is seen struck by the spear (*g*, figure 99). The other two manuscripts (Vaticanus and Bologna) have in his place the jaguar, *h*, but in consequence of the altered order, on the fifth, not on the second, page. The jaguar is here to be looked upon as only another form of the god Tezcatlipoca. Tezcatlipoca and the jaguar are one. The second age of the world, in which the giants lived, and in which Tezcatlipoca shone as the sun, is called in the Anales de Quauhtitlan ocelotonatiuh, "jaguar sun". According to the Historia de los Mexicanos por sus Pinturas Tezcatlipoca changed himself into a jaguar and devoured the giants. It is then clear that there is perfect agreement with the representation of the Borgian codex when we see the jaguar struck by a spear on page 47 of the Dresden manuscript, *i*.[a]

The agreement is still more evident in the third representation In the Borgian codex it is plainly the maize goddess who is represented as struck by the spear, *k*. In Codex Vaticanus the corresponding representation occupies the first place. This is reproduced above in *b*, figure 97. The maize goddess is not here surrounded in the same way with ears of maize, but she is characterized no less by the longitudinal angular black lines on her face. Finally, in the Bologna codex, where the corresponding representation occupies the second place, the quantity of maize ears introduced (*a*, figure 100) again removes all doubt as to the significance of the figure. In *b*, figure 100, I have reproduced in picture and hieroglyph the figure struck by the spear on the third page of the Dresden manuscript, page 48. It is the god "with the kan sign", he who occupies the eighteenth place in the series of twenty divinities at the beginning of the Dresden manuscript (*c*, figure 100). He is also frequently met with elsewhere in the Maya manuscripts and is denoted by Schellhas in his list by the letter E. It can be considered as quite beyond a doubt that this god represents the maize deity, and from the first he was interpreted as such by Schellhas.

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[a] In *i*, fig. 99, the first of the two hieroglyphs is derived from the epitomized representation on p. 24, the second from p. 47 itself.

The direct or, at least, the more clearly discernible agreements of the Dresden manuscript with the manuscripts of the Borgian codex group are confined to these three representations. In the fourth and fifth representations in the manuscripts of the Borgian codex group, not persons, but symbols are depicted struck by a spear. On the fourth page of the Borgian codex *d* is represented, which corresponds to *e* in Codex Vaticanus. It is a carved wooden seat covered with a jaguar skin that has been struck by a spear. In *e*, over the jaguar skin, there is also a mat. Seat, jaguar skin, and mat are familiar badges of royalty. That they are used here as such is made perfectly clear by the fact that in Codex Vaticanus, *e*, there is above the symbols a form sitting on a jaguar skin with the symbol of speech before his mouth—a speaker, a tlatòani; that is, a king. It belongs to the same order of conceptions as that in the Bologna codex, where the image of the sun appears on the throne by the spear; for according to a widespread notion, kings are the sons of the sun. Piltzinteotl, or Piltzintecutli, "god of princes", "master of princes", was a familiar name for the sun god with the Mexicans.

The fifth page of the Borgian codex shows us *f* struck by the spear, a shield and a bundle of spears, and above them an eagle's head, familiar symbols of war and of warriors. The shield and bundle of spears are in a field which is painted yellow, streaked, and beset with a verticillate design. This picture might signify fire or a burnt field or might even be regarded as an elliptical representation of the atl-tlachinolli, "water and fire"; that is, of war. In Codex Vaticanus we have corresponding to those symbols *g*, in which we see water and a mountain with an eagle perched upon it. The eagle is undoubtedly again to be regarded as a symbol of the warrior. The mountain is painted yellow. Fire and the atl-tlachinolli might hence perhaps again be suggested. It seems more probable to me, however, that the water and the mountain are an expression for atl-tepetl, that is, altepetl, or for the aua-tepeua, "the village", the community or the townsmen, in contradistinction to the king. In tlatoani

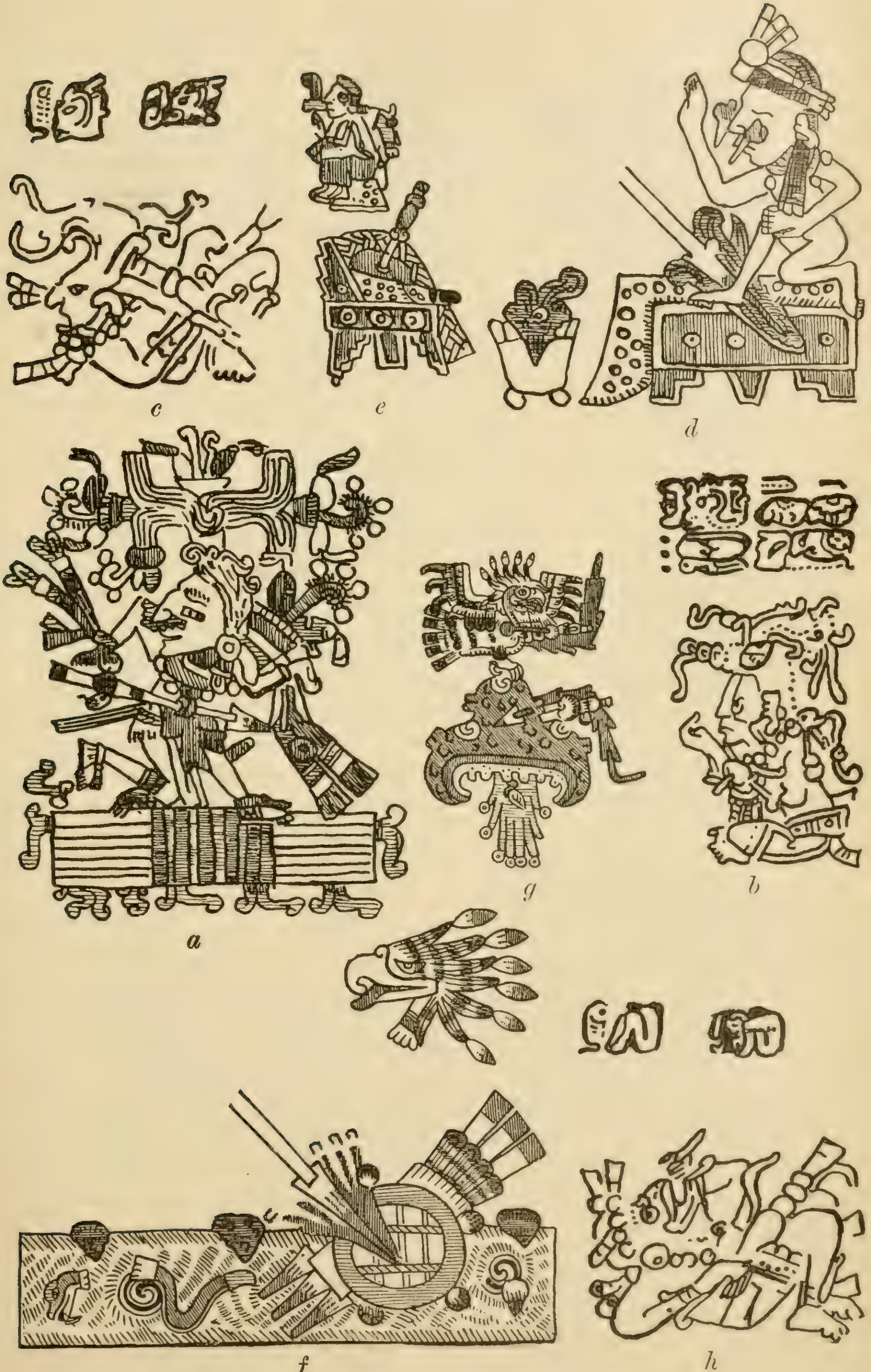

Fig. 100. Symbolic figures from the Maya and Mexican codices.

in altepetl, "the king and the community", are always mentioned together in the texts.

The representations which occupy the fourth and fifth places in the Dresden manuscript are apparently of an entirely different nature. In the fourth place (page 49) it is the tortoise that is struck by the spear, *h*. In the fifth place (page 50) we see the figure of a warrior characterized by a peculiar involute marking running over the eye, which is also distinguishable in the hieroglyph (*a*, figure 101). Here the last figure, at least, seems to me to be a parallel representation to the one which occurs in the fifth place in the manuscripts of the Borgian codex group. That *a* is particularly intended to denote a warrior seems to me clear, from the fact that this is the only one of the five figures struck by a spear who is represented in the act of defense, hurling the spear and opposing his shield to ward off the missile.

The tortoise may also afford a basis for comparison. It has the design of the sun on its shell (see *b*, which is taken from the Perez codex, page 24). As a matter of fact, the box tortoise, widely distributed over North America, of which there is a particular variety occurring in Mexico described under the name of Onychotria mexicana, has upon its shell a yellow radiate design, which might easily be looked upon as an image of the sun. This may be the reason why its hieroglyph, when this does not simply reproduce the head of the animal, as in *c*, has for its eye a design similar to the hieroglyph of the sun. This is the case here (*h*, figure 100) and in the hieroglyph of the uinal Kayab (*d*, figure 101), which likewise contains the tortoise's head as an element. This may also be the reason why the tortoise is represented on page 40 of the Dresden manuscript with torches in its claws. Perhaps on this account it was regarded as the sun animal and as the royal animal.

However this may be, in the first three of the figures struck by the spear, and, in my opinion, also in the fifth, the analogies are perfectly plain between the figures of pages 46 to 50 of the Dresden manuscript and those on the pages of the Borgian codex group which are devoted to a similar representation of the 13×5 Venus periods.

Now, what inference are we to draw from the fact that on these pages the figures of the deity of the morning star—and of those deities, still to be discussed, that are depicted in their place in the Dresden manuscript—are represented throwing the spear, and that in one case the divinity of the water, in others the jaguar, the maize god, the emblem of kings, and warriors representing the community appear struck by this spear? Förstemann propounds the question as to whether this may be the struggle of the sun with Venus, ending with the disappearance of the latter. This view seems to me to be precluded here, for, as we learn from the manuscripts of the Borgian

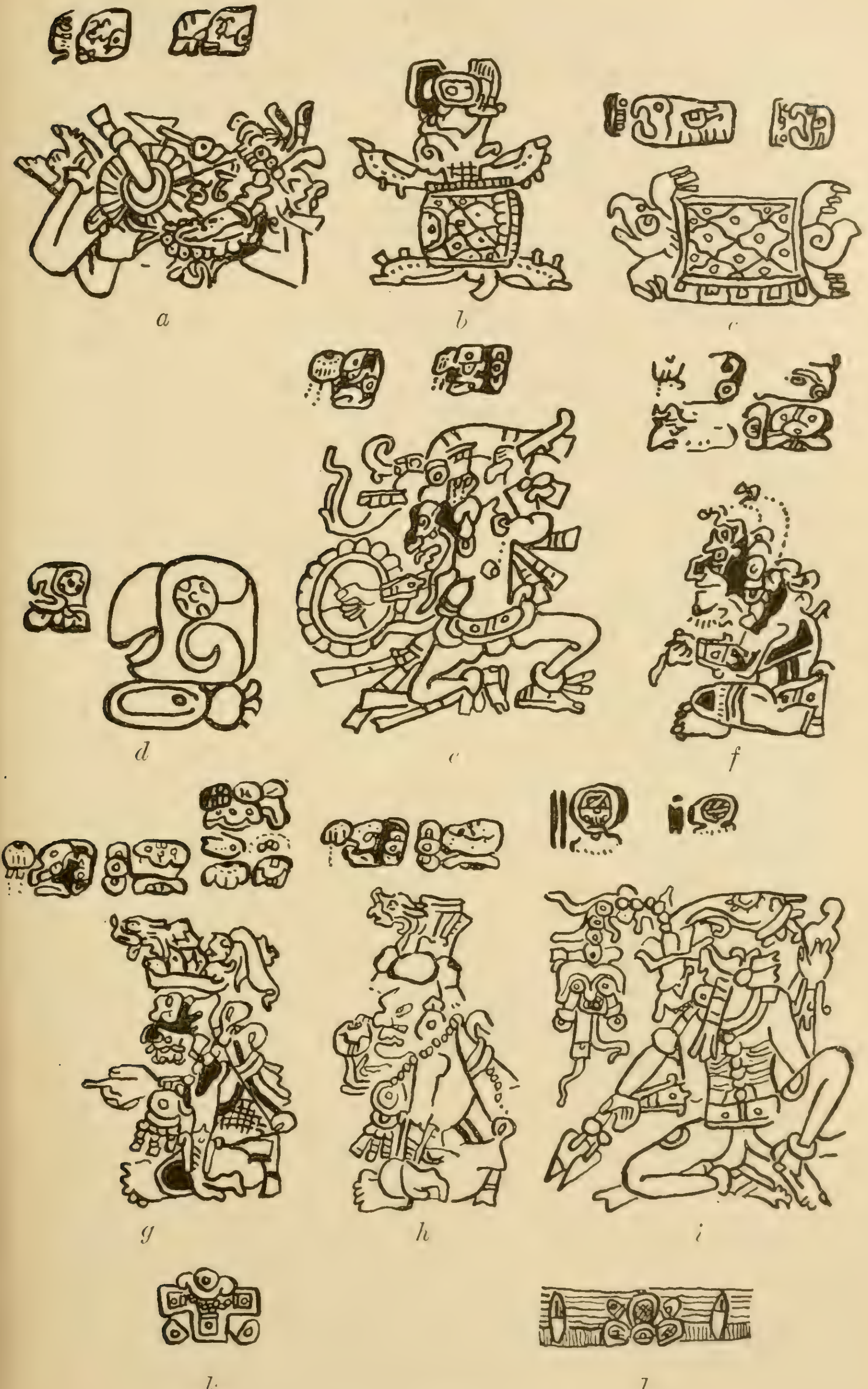
a
b
c
d
e
f
g
h
i
k
l

FIG. 101. Glyphs and deity figures from the Maya codices.

codex group, Venus is, on the contrary, represented as the conquering party. Conjunctions with other constellations might seem to be suggested here, for they are in fact different for the five periods. That a conjunction of the planet with other celestial bodies was observed is positively proved by certain reliefs of Chichen Itza. It is also certain that the jaguar, the tortoise, and the serpent were seen in the sky by the Maya peoples. It is, however, also possible that we have on these pages simply an astrologic speculation arising from superstitious fear of the influence of the light of this powerful planet.

By a natural association of ideas the rays of light emitted by the sun or other luminous bodies are imagined to be darts or arrows which are shot in all directions by the luminous body. The more the rays are perceived to be productive of discomfort or injury, so much the more fittingly does this apply. In this way the abstract noun miotl, or meyotli, with the meaning "ray of light", is derived from the Mexican word mitl, "arrow". Such abstract nouns are used in Mexican as the concrete designation of the object when the object belongs to another one in its nature or properties. Thus miotli, or meyotli, is the arrow, which belongs by nature to a body sending forth arrows, a luminous body. Tonalmitl, or tonalmeyotli, are the sun arrows, the sun's rays; miotli, or meyotli, alone, "the ray". Furthermore, there is a verb, miyotia, also written mihiotia, derived from this, which means "emitting light"; tepan miyotia, "to beam on anyone", "to strike anyone with its light".

I have already mentioned the fact that in Mexico certain influences were ascribed to the planet Venus, generally baleful, favorable in certain signs only; so that, therefore, when the planet appeared anew in the heavens, smoke vents and chimneys were stopped up lest the light should penetrate into the house. In the Anales de Quauhtitlan, appended to the story of the transformation of Quetzalcoatl into the morning star, there is a more detailed account of these influences ascribed to the light of the planet Venus. It is a remarkable passage, of which I give here the literal translation:

1. Auh yn iuh quimatia	And as they (the ancients, the forefathers) learned.
2. Yniquac hualneztiuh	When it appears (rises).
3. Yn tleyn ypan tonalli	According to the sign, in which it (rises).
4. Cecentlamantin ynpan mioytia	It strikes different classes of people with its rays.
5. Quinmina quintlahuilia	Shoots them, casts its light upon them.
6. Intla ce Cipactli ypan yauh	When it appears in the (first) sign, "1 alligator".
7. Quinmina huehuetque ylamatque	It shoots the old men and women.
8. Mochi yuhqui yntla ce Ocelotl	Also in the (second) sign, "1 jaguar".
9. Yntla ce Mazatl	In the (third) sign, "1 stag".
10. Yntla ce Xochitl	In the (fourth) sign, "1 flower".

11. Quinmina pipiltotontzin	It shoots the little children.
12. Auh yntla cem Acatl	And in the (fifth) sign, "1 reed".
13. Quinmina tlatoque	It shoots the kings.
14. Mochi yuhqui yntla ce Miquiztli	Also in the (sixth) sign, "1 death".
15. Auh yntla ce Quiyahuitl	And in the (seventh) sign, "1 rain".
16. Quiminaya quiahuitl	It shoots the rain.
17. Amo quiyahuiz	It will not rain.
18. Auh yntla ce Olin	And in the (thirteenth) sign, "1 movement".
19. Quinmina telpopochtin ychpopochtin	It shoots the youths and maidens.
20. Auh yntla ce Atl	And in the (seventeenth) sign, "1 water".
21. Ye tohuaquiz	There is universal drought.

I would observe that the reprint of the text of these annals is unfortunately very faulty. I have, therefore, had to make a few slight corrections, in the ninth line substituting ce Mazatl for ce Mecatl, and in the twelfth cem Acatl for ce Mazatl. The order of the signs in the tonalamatl justifies these corrections. I would like, however, to make a third and more important change. I would like to replace ce Quiyahuitl, in the fifteenth line, with ce Coatl, "1 snake"; that is, the ninth sign for the seventh. I believe this would be correct, because the introductory auh, "and", is used elsewhere in this passage only with the signs of the column Cipactli, Acatl, Coatl, Ollin, and Atl, and by wrong reading Quiauitl may very easily have been substituted for Coatl.

Let us admit this change, and let us for the present leave out what is said at the signs ce Mazatl and ce Xochitl (lines 9 to 11); then we have left the five signs of the column Cipactli, Acatl, Coatl, Ollin, and Atl, which, as we have seen, are in fact the signs ruling the initial days of the Venus periods. If we arrange them according to their true order, not as they follow one another in the tonalamatl, then, in the Anales de Quauhtitlan, the following would be said of the influence of the planet Venus in its five consecutive periods:

1. In the (first) sign, Cipactli, "alligator", it shoots the old men and women.
2. In the (ninth) sign, Coatl, "snake", it shoots the rain, it will not rain.
3. In the (seventeenth) sign, Atl, "water", there is universal drought.
4. In the (fifth) sign, Acatl, "reed", it shoots the kings.
5. In the (thirteenth) sign, Olin, "movement", it shoots the youths and maidens.

Here it will be seen at once that as far as the fourth and fifth periods are concerned the statements of the Anales de Quauhtitlan exactly agree with the pictorial representations of the Borgian codex. In the Borgian codex, too, we have in the fourth period (*d*, figure 100) royalty struck by the spear, and in the fifth (*f*, figure 100) the warriors. The young men (telpochtin) and the warriors (quauhtin) are essentially, and in the usage of speech, at least in that of Mexico, identical. In the third period as well there is exact agreement between the accounts of the Anales and the representations of the

Borgian codex. In the Borgian codex we saw in the third period the maize goddess struck by the spear (*k*, figure 99). The maize goddess, however, is here plainly not the divinity who dispenses sustenance in abundance, but the goddess called by the interpreter of the Codex Telleriano-Remensis la que causava las hambres ("the one who causes famine"); for in *k*, figure 99, the maize ears are devoured by worms painted white and having death's-heads. Then, too, in the corresponding representation of the Bologna codex (*e*, figure 95), the ground beneath the maize goddess is surrounded by flames and smoke; that is, it is dry and barren.

It is more difficult, in case the correction proposed above is really admissible, to form a clear idea in regard to a possible agreement in the second period between the accounts of the Anales and the representations of the picture writings. For the first period, likewise, I forego, for the present, any attempt to find a tertium comparationis. But this much, I believe, is to be learned from the account in the Anales, that it is hardly possible to see anything else in these figures struck by the spear than augural speculations regarding the influence of the light from the planet, suggested by the initial signs of the periods. We shall have to accept this as true, not only for the representations of the Borgian codex group, but also for the pictorial representations and the hieroglyphic text of the Dresden manuscript.

It is not wholly without interest that in the passage of the Anales de Quauhtitlan quoted above mention is also made of the augural significance of the signs ce Mazatl and ce Xochitl (lines 9 to 11). These are not signs which have anything to do with the beginnings of the Venus periods. The first sign denotes the day on which the Ciuapipiltin, the specter women, the souls of women who have died in childbed, who live in the west, come down from heaven and strike children with epilepsy. On this day, therefore, children are kept in the house. The other sign, however, was dominated by a group of gods of whom Macuilxochitl or Auiateotl, the god of merrymaking, may be considered typical, and who are represented on pages 47 and 48 of the Borgian codex (Kingsborough, pages 68, 67) with the Ciuapipiltin. It may safely be assumed, I think, that the relation of these signs to these deities is based on the notion that the separate divisions of the tonalamatl, which is arranged in columns of five signs each, have some mysterious connection with the four cardinal points. That it was possible in the Anales de Quauhtitlan to designate whatever baleful influence of the planet Venus resulted from this connection is only a proof that the whole arrangement of the tonalamatl in columns of five signs each owes its origin to the fact that the tonalamatl has been brought into accord with the observed Venus period.

It yet remains for us to form now a clear idea of the meaning of the personages who are represented on pages 46 to 50 of the Dresden manuscript with spear throwers and bundles of spears in their hands, taking the place of the deity of the morning star armed with a spear thrower and a bundle of spears of the other manuscripts. They are depicted likewise on the right half of the pages, but in the division near the middle. Their hieroglyph is in the text above them, at the beginning of the second line and directly over the hieroglyph of the figures struck by the spear, and it is accompanied by the hieroglyph of the morning star (*c*, figure 96), clearly signifying that these figures are to be considered the regents of the five consecutive Venus periods.

The regent of the first period is the black god whom I have reproduced in form and hieroglyph in *e*, figure 101.[a] His picture is in the tenth place (*f*, figure 101) in the series of the twenty divinities at the beginning of the Dresden manuscript, and also occurs many times elsewhere in the same manuscript, for example, in the middle and lower divisions of page 14 (*g* and *h*, figure 101) and on page 74, the closing page. He occurs in the Troano codex, pages 33 and 34, with a scorpion's tail. Here another black divinity appears to be very closely connected with him, who is usually distinguished from him by the hieroglyph and the formation of the face, but in the Troano codex occurs in immediate relationship with him and evidently in kindred representations, and likewise has a scorpion's tail. Schellhas designated these two figures in his list with the letters L and M.

I will indulge in no speculations respecting the character and possible name of this divinity, but only express my personal view that in this god we should recognize a form akin to the fire god of the ancient Mexicans. We may assume, I think, that he is intended here to denote the first cardinal point, or the east.

I have reproduced the regent of the second period, with his hieroglyph, in *i*. This is a figure which I have not met elsewhere in the manuscripts and which is, therefore, wanting in the Schellhas list. It is safe to conclude that the hierglyph given in *i* is really the hieroglyphic designation of this particular god because it occupies the same place as the known hieroglyph of the regent of the first period and because it follows the hieroglyph of that regent on page 24. The body of this god is painted red, and on the front of the trunk, which faces the spectator, are drawn the vertebræ and ribs of a skeleton. The nose curves downward like that of the rain god, Chac. The other characteristics of that god, the long crooked tooth and the flourish on the bridge of the nose, are lacking. It seems to me significant that the string of precious stones, hanging over in front from the headdress, has, attached to it by a bow, the hieroglyph of the planet Venus. I can not refrain from comparing this hieroglyph with *k*, the figure drawn on pages 80 to 84 of Codex Vaticanus B in front of the breast of the deity of the planet Venus (see *b*, figure 97) and which is intended to represent an eye of light, perhaps a star, as will be seen by comparing it with the bright sky (*l*, figure 101). I am, therefore, inclined to think that we ought to recognize in our *i*, figure 101, the Maya representation of the deity of the morning star, or the planet Venus. The hieroglyph corresponds in its essential elements with the principal hieroglyph of the moan bird (*a*, figure 102). In interpreting the latter I made use of the oxlahun taz muyal, "thirteen layers of clouds", which are invoked in the Misa milpera Xcanchakan.

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[a] The hieroglyphs of the regents of the Venus periods are also set down on the epitomized p. 24, but only those of the regents of the first two periods.

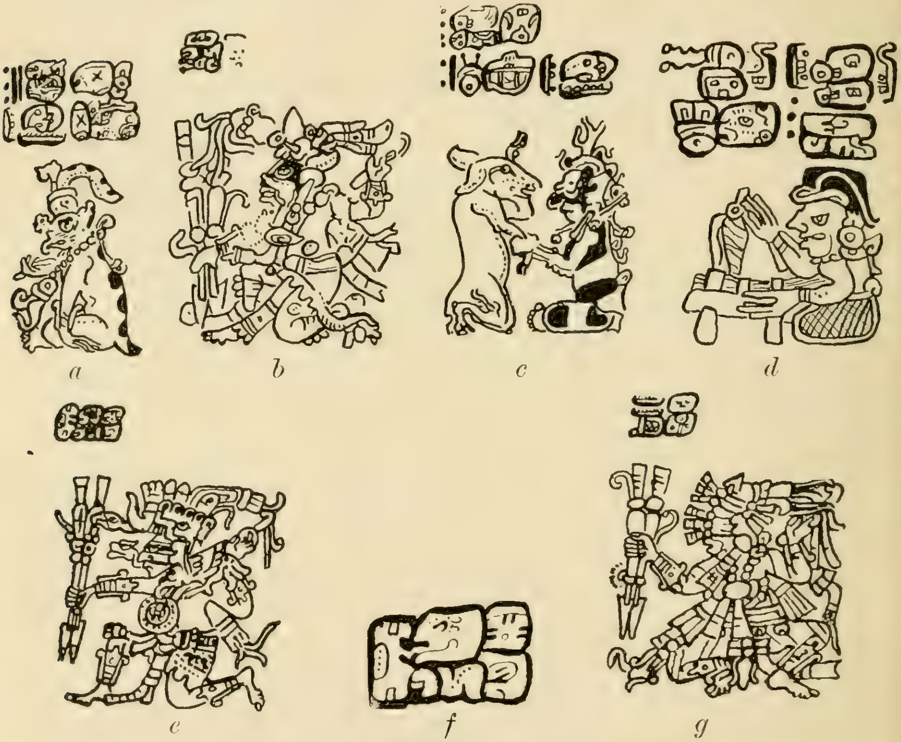

FIG. 102. Glyphs and deity figures from the Maya codices.

The regent of the third period, with his hieroglyph, is reproduced in *b*, figure 102. This one, too, is not in the Schellhas list, nor are the regents of the last two periods. The face exhibits unmistakable animal characteristics, and an animal's ear can be distinguished above the pierced ear disk. The hieroglyph contains an element which occurs as the essential element in the hieroglyph of a god with a deer's head in the Dresden manuscript, *c;* also, it is true, in the Troano codex, in a hieroglyph denoting a feminine occupation, weaving or embroidery, *d*.

The regent of the fourth period is reproduced in *e*, figure 102, in picture and hieroglyph. He is obviously a warlike divinity. A jaguar skin is wrapped around his hips, and he wears on his breast a disk apparently bordered with jaguar skin. As headdress he wears the conventionalized head of a bird having a crest. An entire bird is worn as an ear peg, with the head stuck toward the front through the much-enlarged hole in the lobe of the ear. There is a serpent's head before his mouth (as a nose peg?), and the head of a bird projects over his forehead. The face painting strikingly recalls that of the Mexican Tezcatlipoca. The hieroglyph, unfortunately, is not plainly drawn. I have therefore repeated it in *f*, somewhat enlarged. There is in front the element which in the hieroglyph of the jaguar is combined with the abbreviated jaguar head, and in other places is associated with the cardinal point east, probably denoting a color (red). It is not difficult to recognize the element kin, "sun", at the right, and in the center a head with a bleeding, empty eye socket. All these are elements which might stand for a war god.

Finally, the regent of the last period, *g*, is a god with bound eyes, as is most fitting for a deity of the fifth cardinal point, the downward direction, the depths of the interior of the earth; and there is a temptation to discover a Tzontemoc, "moving with the head turned downward", in the hieroglyph, which contains the sign Ahua turned upside down.

In the Dresden manuscript, in the top division on the right side of the page, there are five additional divinities, who are represented holding a vessel in their hands and sitting on a celestial throne. But, since there are no corresponding figures on the pages of the Borgian codex group, I shall not discuss them further in this article.

In all cases of the occurrence of the Venus period hitherto discussed the question has been one of multiples which naturally result from the length of the period and the designation of the days according to the tonalamatl system. There is, however, a representation in the Borgian codex, and in no other manuscript of this group, in which the length of the Venus period seems to be compared directly with the length of the solar year or to be measured by it. In former articles I have taken occasion repeatedly to call attention to the significance of this beautiful page of the Borgian codex, page 27 (Kingsborough, page 12). On this page the four quarters of the tonalamatl and the four quarters of the period of 52 years, which are designated by their initial day and their initial year, respectively, are assigned to the four cardinal points in such a manner that they are associated with four images of the rain god, which are placed in the four corners of the page and are colored differently (black, yellow, blue, red) according to the point of the compass and represented as beneficial or injurious to the crops. A fifth figure of the rain god, striped white and red, is added in the center to designate the fifth cardinal point, the center, or the direction from above downward; but there are naturally no dates corresponding to those given with the corner figures, since the four quarters suffice for the divisions of time.

Page 69 in Codex Vaticanus B (Kingsborough, page 28) corresponds to this one of the Borgian codex. While, however, Codex Vaticanus B is contented with this one page, in the Borgian codex the page just described has a parallel representation placed in juxtaposition with it. In this also, page 28 of the Borgian codex (Kingsborough, page 11), there are five figures of the rain god, four distributed at the corners and one in the center. They, too, are designated by the supplementary representations as beneficial or harmful to the growth of the crops; but there seems here to be no underlying reason for the sequence of colors. The order, beginning with the east and ending with the center, is black, white and red striped, yellow, black again, and lastly red. There are dates with each of the five figures, three in each division, which, unfortunately, are partially effaced. As far as they can be distinguished they are as follow:

(East) Black rain god	Year 1 Acatl	Day 4 Ollin	?
(North) White and red striped rain god	2 Tecpatl	5 Cipactli	10 Quiauitl
(West) Yellow rain god	3 Calli	9 Atl	7 Coatl
(South) Black rain god	4 Tochtli	[3] Atl	? Coatl
(Center) Red rain god	5 Acatl	1 Atl	13 Mazatl

Five successive years, then, are specified on this page, and two days are named in each. The day named in the first year in the first place is the day 4 Ollin, which, as explained above, is referred to in the Dresden manuscript as the day on which the morning star disappears in the rays of the rising sun, or when the morning star rises at the same time as the sun. The day named in the fifth year in the first place, the day 1 Atl, "1 water", is distant from the day 4 Ollin exactly 1,752 days, or three Venus periods. In connection with this it is necessary to remember that, as is usual in the Borgian codex in the case of all computations extending over a longer or shorter series of days, 1 Cipactli is set down as the first day, and the 5 years on this page are reckoned from 1 Cipactli, while the naming of the years, as usual, begins with 1 Acatl. Here the day 1 Atl in the fifth year again denotes the day on which the morning star rises at the same time as the sun. Though I have not yet been able to discover a law for the days lying between and coming after, and must assume for the present that they are only connecting links, that indication from those dates, 5 Acatl, 1 Atl, can not be accidental. We shall have to admit that not only an instance of the Venus period, but a very remarkable one, is recorded on this page.

I come to the close. The agreement extending to details that existed between the Mexicans and the Mayas in the system of the calendar and the twenty day signs doubtless corresponded to an agreement in their sacerdotal science in many other particulars. It could hardly be otherwise in view of the active intercourse which existed between these two great civilized races. I believe the foregoing has, for the first time, furnished conclusive proof of this. While the Mexican forms and names have furnished a key for the analysis of the day signs, the detailed computations of the Dresden manuscript and Förstemann's determination of them first afforded a basis for the astronomic periods. The circumstance that in the Mexican manuscripts the result of the computations is given without the process will always make their solution a difficult task.

Nevertheless, we have reason to expect that whatever progress shall be made in interpreting the documents of either of the peoples will be of use in throwing light upon the dark passages in the documents of the other of these two great civilized nations.

AIDS TO THE DECIPHERING OF THE MAYA MANUSCRIPT

BY

E. FÖRSTEMANN

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AIDS TO THE DECIPHERING OF THE MAYA MANUSCRIPTS

By E. Förstemann

NUMBERS AND DATES IN THE DRESDEN CODEX[a]

Introduction

Since explaining in my Erläuterungen zur Mayahandschrift der Königlichen öffentlichen Bibliothek zu Dresden (Dresden, 1886) the numeral system of the Maya, as well as the series of numbers occurring in the manuscript, I have succeeded in obtaining further light on some points of importance closely connected therewith; and I now present three of these points, while I reserve some which seem not yet ripe for publication.

The Numerals Inclosed in Red Rings

In certain passages of the manuscript one or two of several numerals standing one above the other are encircled with red. In my Erlaüterungen I was still obliged to designate these as enigmatic. I here note down these passages and indicate the red circles by parentheses:

Page 24	Page 31			Page 43	Page 45
6	(6)	(0)	7	17	1
2	(1)	(17)	(2)	(12)	(10)
(0)			14		
			5		

Page 58	Page 62		Page 63			Page 70			
1	1	6	11	0	7	1	4	4	10
7	4	(1)	(15)	(17)	2	12	10	(6)	(8)
(11)	(16)				14	(6)	(6)		
					(19)				

Of these sixteen columns of numerals fifteen are entirely correct and require no emendation; in the third group on page 31 alone the writer permitted himself to employ a very extraordinary abbreviation for the sake of economizing space. He wrote the numerals 7, 2, and 14 in black one under the other, and joined to the 14 a red 5, leaving no space between. Now, this 5 neither signifies an independent number nor does it together with the 14 designate 19, but it denotes that besides the 14 a 19 is to be understood. Thus we must read here 7, 2, 14, 19, the same group that is found on page 63.[a] This explanation is confirmed by the fact that the two other groups on page 31 (6, 1 and 0, 17) also occur on pages 62 and 63.

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[a] Zur Entzifferung der Mayahandschriften, Dresden, August 31, 1887.

The significance of these groups becomes more apparent if we recognize the fact that the red circles refer not merely to the numerals which they surround, but to the entire group, and that they are attached to only one or two numerals in the group for the sake of economy of space or for calligraphic purposes. Thus each group constitutes one single number, which is to be read according to the rule stated by me on page 5 of my Erläuterungen.

The numbers are as follows: Page 24, 2,200; page 31, 121, 17, 51,419; page 43, 352; page 45, 30; page 58, 511; page 62, 456, 121; page 63, 235, 17, 51,419; page 70, 606, 1,646, 86, 208.

To these sixteen numbers I add four more, which, it is true, have no red circles in the manuscript, but which, according to my firm conviction, are without a circle only because the space is limited, their purpose being exactly the same as that of the other numbers under discussion. These four numbers are the following:

1. Page 70, fourth column. 15, 9, 15, 14 (I place the figures side by side, not one under the other) =111,554.
2. Page 70, fourth column, written in red between the front numerals. 14, 2, 16, 12 (here I correct the 16 to 14, as in the penultimate numeral an error of two units is quite natural owing to the Maya system of numeration) =101,812.
3. Page 73, fourth column. 11, 11, 15, 14=83,474.
4. Page 73, fifth column. 4, 16, 8, 12=34,732.

To speak briefly, each of these twenty numbers is intended to be subtracted from a large number standing near it, in order that the remainder shall denote a certain day likewise standing near by. I shall at once proceed to explain this matter more in detail.

The Large Numbers

On page 36 of my Erläuterungen is to be found a list of many numbers, some of which, it is true, were incorrectly read at the time, but they exhibited the remarkable circumstance that almost all of them lay between a million and a million and a half. I think I have come considerably nearer the solution of the riddle, which has hitherto seemed absolutely insoluble, by the hypothesis that each of these numbers designates a particular day in the course of history. For the Mayas seem to have known no other way of designating a day with perfect exactness. That is to say, if they designated the day only by its number in the week of 13 days and by its position in the series of twenty day signs, this designation would apply to a multitude of days recurring at intervals of 260; but this designation would be satisfactory only in certain cases.

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[a] The 5 appears to be a correction by the original scribe. C. T.

It was possible, indeed, to proceed with more precision by adding to the number of the week day and to the day sign also the month and the position of the day in this month. This mode was frequently employed, as we shall see below; but even this was not always quite free from error, for these four designations would apply to any day recurring at an interval of exactly 52 years. I do not find the least indication of a custom to increase the degree of certainty by a statement of the corresponding Ahau katun of 312 years.

A perfectly exact computation was attained only by deciding on some fixed day (the creation of the world, perhaps, or the birth of a principal god) as a point of departure, and by counting the days from this zero point. But unless I am quite mistaken a fourth day of the week must have been used for this zero point, occupying the seventeenth place in the day series (according to the notation now introduced, a day IV 17 or 4 Ahau), and one which also possessed the peculiarity of being the seventh day [a] of the eighteenth month, which can only be the case in a year 9 Ix. Hence this important day is a 4 Ahau 8 Cumku.

It is not difficult to understand that in proceeding from this zero point every number must designate a particular day. If the number is divisible by 260 without a remainder, a day IV 17 is, of course, intended; if, on the contrary, there is a remainder, it is only necessary to count forward in the Maya calendar from the day IV 17 a number of days equal to this remainder in order to find the day sought. Thus the remainders 1, 2, 3, 4, etc., lead to the days V 18, VI 19, VII 20, VIII 1, etc.; the remainders 256, 257, 258, 259 lead to the days XIII 13, I 14, II 15, III 16. Consequently, the day 1,201,114, for instance, is a IX 11; 1,202,032 is a IV 9; 1,233,985 is a III 2, etc.

In the same way the day sought can be found, if, instead of counting forward from the day IV 17 as many days as are equal to the remainder left after division by 260, we count backward from IV 17 a number of days equal to 260 less that remainder. The result is the same whether one counts 174 forward or 86 backward, 52, 25, or 243 forward or 208, 235, or 17 backward. These numbers counted backward, as I indicated above, are the ones encircled with red. Let us now examine all of the 20 numbers.

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[a] Doctor Förstemann is proceeding upon the theory that the first days of the years were Kan, Muluc, Ix, Cauac, instead of Akbal, Lamat, Ben, Ezanab, now conceded to be the system of the Dresden codex. Hence it would be properly the eighth day. C. T.

Page 24. The large numbers, 1,366,560 and 1,364,360; the difference of the two, 2,200, encircled with red; the first day is a IV 17, the second a I 17, and both days are actually recorded on the lower edge.

Page 31. 1,272,544, encircled number 121; hence the day 1,272,423 is intended; that is, a day XIII 20, and the latter date is actually recorded above it.

Page 31. 1,268,540, a circle around 17; hence, 1,268,523; hence again, XIII 20, which date is also repeated here.

Page 31. 1,538,342 (I read, not 10, 13, 3, 13, 2, but 10, 13, 13, 3, 2), a circle around 51,419, as was explained above; consequently, 1,486,923; again, XIII 20, which day is also recorded here.

Page 43. 1,435,980, a circle around 352; consequently, 1,435,628=III 5, as written above.

Page 45. 1,278,420, a circle around 30; therefore, 1,278,390=XIII 7, which is recorded below.

Page 58. Two large numbers, 1,426,360 and 1,386,580, a circle around 511; consequently, 1,425,849 and 1,386,069, the two=XIII 6, which date is actually recorded on the page.

Page 62. 1,272,921, a circle around 456; consequently, 1,272,465=III 2, which stands between.

Page 62. 1,272,544, a circle around 121; hence, 1,272,423=XIII 20, which likewise stands between, as on page 31.

Page 63. 1,234,220, a circle around 235; hence, 1,233,985=III 2, as is recorded in the manuscript.

Page 63. 1,268,540, a circle around 17, thus 1,268,523=XIII 20, as is noted in the manuscript, like page 31.

Page 63. 1,535,004 (I read, not 10, 8, 3, 16, 4, but, with the addition of a line, 10, 13, 3, 16, 4), a circle around 51,419; consequently, 1,483,585=III 2, corresponding to the manuscript.

Page 63. 1,538,342, a circle around 51,419; therefore, 1,486,923=XIII 20, which is in the manuscript, as on page 31; thus the 51,419 serves for two numbers in common.

Page 70. 1,394,120, a circle around 606; therefore, 1,393,514=IX 11, as in the manuscript.

Page 70. 1,437,020, a circle around 1,646; therefore, 1,435,374=IX 11 again; compare the manuscript.

Page 70. 1,201,200, a circle around 86; therefore, 1,201,114=IX 11 again, which is also recorded here.

Page 70. 1,202,240, a circle around 208; therefore, 1,202,032=IV 9, as the manuscript likewise shows.

Now follow four passages in which, as I before remarked, the circles are wanting, although the functions of the numbers in question are the same as those which are encircled, or they would otherwise be quite inexplicable:

Page 70. 1,567,332—101,812 (according to the supposition above mentioned)=1,465,520.

Page 70. 1,520,654—111,554=1,409,100.

The last two remainders are both meant for the day VIII 17. Now, directly in the middle of the page the day X 17 is recorded, but over the X an VIII is written quite fine as a correction.

Without being set down a second time, these last two large numbers are the minuends in the two final cases; but the subtrahends, which should really be encircled, do not stand here, but on page 73, at the top of the fourth and fifth columns, at the farther end of the series of numbers which extends from pages 70 to 73, since there was no room for them on page 70. Thus we read:

Page 70. 1,567,332—(page 73) 34,732=1,532,600, again=VIII 17.

Page 70. 1,520,654—(page 73) 83,474=1,437,180, again=VIII 17, as we read page 70 corrected.

Thus it is proved by twenty-one large and as many smaller numbers surrounded by circles and by applying but few and insignificant conjectures, in the first place, that the circles in a way signified the minus sign (—) with the Mayas and, in the second, that the large numbers always denoted particular days. As a rule, then, the large number is the minuend and the encircled number the subtrahend, while the remainder is recorded in the manuscript, not by a number, but by its corresponding day.

But there are found on pages 51 and 52 six more large numbers without such encircled subtrahends; unfortunately, these are in parts very indistinct and probably spoiled. First, on page 51, the numerals 8, 16, 4, 11, 0 occur. If an 8 is read here instead of the 11, the result is the number 1,268,800; that is, the most important of all days, IV 17, which likewise seems to be recorded above. Numerals in red, 10, 19, 6, 0, 8, are crowded in between these numbers. If we substitute a 1 here for the 0, we have 1,578,988, the day XII 5, therefore, and this date is set down below.

The following page, 52, at the right near the top, contains four large numbers, again two black ones with two red ones written in among them, two in the fifth and two in the sixth column. The two occurring in the sixth present no difficulty; they are 1,412,848 and 1,412,863, and below the days XII 5 and I 20 are specified, which, in fact, correspond to the numbers. The difference between the numbers, as between the days, is 15. On the other hand, the numbers in the fifth column can not be made to agree. The manuscript reads 9, 16, 4, 10, 18, and 9, 19, 8, 7, 8. I propose in the first number to read 11 instead of 10 and in the second 5 instead of the first 8; then the numbers will denote 1,412,878 and 1,434,748, and these actually correspond to the days III 15 and VII 5, which are recorded below. In fact, the first of the two numbers is distant by a difference of 15 from the number 1,412,863, as well as the first of the two days, from the day I 20 mentioned above. I am forced to confess that my conjecture in regard to the last number is somewhat uncertain. Still, it answers the requirement in so far as it shows the difference 30, the same as is shown by the corresponding days, since its distance from the last number but one is 21,870; that is, 84×260+30. Multiples of 260 are naturally indifferent here.

Of all the numbers in the manuscript, reaching a million, only one still remains to be discussed, with the exception of those between the coils of the serpents on pages 61, 62, and 69. This is 2,804,100, on page 31, in the last but one of the upper columns. It is authentic, since it is equal to 10,785×260, corresponding therefore to the day IV 17, repeatedly recorded near by. Besides this, it is equal to 147×18,980+14,040, to wit, 147 katuns of 52 years augmented by the number 14,040, which number is extremely important in the manuscript, although it is still enigmatic.

The ten numbers between the coils of the five serpents, mentioned above, which seem to attain the sum of twelve millions, I shall leave undiscussed for the present,[a] for their interpretation is not yet ripe for publication, although remarkable relations are already indicated.

In my opinion my demonstration also definitely proves that these large numbers do not proceed from the future to the past, but from the past, through the present, to the future. Unless I am quite mistaken, the highest numbers among them seem actually to reach into the future, and thus to have a prophetic meaning. Here the question arises, At what point in this series of numbers does the present lie? or, Has the writer in different portions of his work adopted different points of time as the present? If I may venture to express my conjecture, it seems to me that the first large number in the whole manuscript, the 1,366,560 in the second column of page 24, has the greatest claim to be interpreted as the present point of time. It denotes the expiration of 12 ahau katuns of 312 years each; that is, 3,744 years.

In conclusion, I will remark that none of the large numbers furnish me with any indication that a year of 365¼ days was already known to the Mayas. In these calculations, at least, which seem to treat of sacred matters, the exposition may not have kept pace with the knowledge in the meantime acquired, as often happens in similar cases, of which the Russian calendar furnishes a good example.

The Dates of the Calendar

I do not mean here those short combinations of the number of the week day with the day sign, for they have long been understood, both singly and joined together as series of days; but I mean rather the more definite statements which give a date that is unequivocal during a period of 52 years, in which the symbol of the month and the position in the month are added to the number of the week day and the day sign. To begin at once with the zero point frequently used in Maya chronology (on pages 24, 31, 51, 52, 58, 62, 63, 69, 70 of the Dresden manuscripts, occurring several times in places), they are the figures of this formula:

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[a] They have been discussed and explained by Thomas in Mayan Calendar Systems, II, 22d Rep., B. A. E., pt. 1, 1904.

IV 17th day 4 Ahau.
or
8, 18th month 8 Cumku.

In what follows I shall write these groups in one line only (thus IV 17; 8, 18th month), although in the manuscript they have the form given above.

A striking feature in these, the commonest of all groups, is that they appear to designate a quite impossible day, since every month begins with one of the year regents (the first, sixth, eleventh, or sixteenth day), and consequently the seventeenth day can never have the eighth place in the month. This group must accordingly be understood as designating the day IV 17, which the eighth day of the eighteenth month immediately succeeds. One must constantly subtract 1 from the number standing before the month sign in order to find the day intended. This rule proves to be correct in every case where no defacement is found. Such designation by the day following is not extraordinary. Consider the use of pridie in Latin or the Greek manner of designating by *τῆ προτεραία* and of counting backward, as *ἐννατη φϑίνοντος*. Our own holy eve preceding holidays is something similar. In the Maya calendar itself the periods of 24 years, the ahaus, are not counted by new year's days but by the second days of the years (see Erläuterungen, page 22).

After these preliminary remarks, we will examine the dates of the calendar that occur in the manuscript, and consider especially their usual combination with the encircled numbers and the large numbers. In this I must be brief, and leave much to the reader's own computation.

On page 24, at the bottom of the first three columns, are the three dates:

IV 17; 8, 18th month. I 17; 18, 17th month. I 17; 18, 3d month.

These dates occur in the years 9 Ix, 3 Kan, and 10 Kan. In order to fix the difference of time between them it is necessary to read from right to left. From the eighteenth day of the third month in the year 10 Kan to the eighteenth day of the seventeenth month in the year 3 Kan it is 32 years and 280 days, or 11,960 days—a very important number in our manuscript (for example, on pages 51 to 58). From the eighteenth day of the seventeenth month in the year 3 Kan to the eighth day of the eighteenth month in the year 9 Ix it is, moreover, 6 years and 10 days; consequently 2,200 days, and, as we saw above, this 2,200 surrounded by a circle is actually set down with the three dates, and designates the difference between the two large numbers, which are found above it.

On page 31, lowest line of the upper third, IV 17; 18th month is twice given, the writer having evidently forgotten the 8 before the month sign. As far as we now see, only the known zero point for the large numbers occurring above it is given. Here, as in many cases, we should obtain more exact knowledge if the upper line of the page had not been destroyed.

Pages 46 to 50, of which I have spoken more particularly in my Erläuterungen, pages 34 to 35 and 65 to 66 (although there are still several errors in the statements of the days and the months in the last-named passage), contain no fewer than 780 such calendar dates, which would seem at first sight quite impossible, but is actually the case. For at the top, on the left, each page contains fifty-two simple entries of days, consisting of the number of the week day and the day sign, but underneath, in three lines separated from each other, are twelve dates in all, consisting of the month sign with the preceding day number. Each of these fifty-two day entries, together with each of the three entries standing directly beneath, constitute a complete and perfectly appropriate calendar date, and these separate dates show the correct interval of 90, 250, 8, and 236 days, demonstrated in my Erläuterungen to represent the apparent revolution of Venus. Each page, therefore, contains 52×3, or 156 calendar dates, and the five pages together have 780. These are arranged in thirty-nine lines having four dates on each page; but the lines are always to be read straight through all the five pages. As I am not able to reproduce the thirty-nine lines here, I will, at least, give the first one, consisting of twenty terms:

III 13; 4, 7th month.
II 3; 14, 11th month.
V 13; 19, 5th month.
XIII 1; 7, 6th month.
II 17; 3, 18th month.
I 7; 8, 4th month.
IV 17; 18, 16th month.
XII 5; 6, 17th month.
I 1; 17, 10th month.
XIII 11; 7, 15th month.
III 1; 12, 9th month.
XI 9; 0, 10th month.
XIII 5; 11, 3d month.
XII 15; 1, 8th month.
II 5; 6, 2d month.
X 13; 14, 2d month.
XII 9; 10, 14th month.
XI 19: 20, 18th month.
I 9; 5, 13th month.
IX 17; 13, 13th month.

The item 0, 10th month, probably erroneously written for 20, 10th month, in the twelfth place, is, of course, the same as 20, 9th month. Now let the years be calculated in which these twenty dates must occur and we have the following:

11 Ix, 11 Ix, 12 Cauac, 12 Cauac, 12 Cauac, 13 Kan, 13 Kan, 13 Kan, 1 Muluc, 1 Muluc, 2 Ix, 2 Ix, 3 Cauac, 3 Cauac, 4 Kan, 4 Kan, 4 Kan, 4 Kan, 5 Muluc, 5 Muluc.

The first date of the second line, I must add, is XI 13; 4, 7th month, and denotes a year 6 Ix. Since from the year 11 Ix to the year 6 Ix it is 8 years, all the thirty-nine lines will extend over 312 years, or an Ahau katun; but I will here remark, in order not to be accused of carelessness, that the gaps after the thirteenth and twenty-sixth lines have not escaped me.

On page 51, at the top, on the left, is undoubtedly the date IV 17; 8, 18th month, half obliterated. Below it there is certainly another date, namely, XII 5, and probably, added to it, the sign of the thirteenth month, with the symbol kin ("sun") before it. I should like to read 1, 13th month, and regard the 8 over the kin as an error, assuming that the writer had overhastily begun to write the number beginning with an 8 which stands below before he had written down the calendar date. The matter is far from clear, owing to the uncertainty, stated above, in regard to the large numbers.

Page 52, at the top, on the right, twice has the normal date IV 17; 8, 18th month, though it is half obliterated.

On page 58, at the bottom, on the right, we again find the normal date, and with it another, namely, XIII 6; 11th month. It is evident that before the month sign a number has been omitted, in my opinion a 2. This indicates the year 8 Muluc, and shows (read from right to left) a distance of 1 year and 146 days from the normal date, that is 511 days, exactly the same number that we found above in the encircled number standing there.

Page 61 has the normal date in the middle of the first and second columns, while at their lower end it has IX 1; 12, 17th month (that is, the year 4 Ix), which date is repeated at the top of the third and fourth columns. As there are no numbers connected with these, nothing further is to be said about them.

Pages 61 to 62 further contain four serpents. Above the fourth one the last date is repeated for the third time. Under each serpent there are two dates, which, with the exception of the first, are quite correctly formed, according to my rule, although the second, in particular, may have suffered a change. I here introduce these eight dates, read from the right to the left:

III 1; 16, 2d month. XIII 20; 1, 14th month. III 3; 14, 17th month.
III 11; 7, 5th month. III 1; 12, 12th month. III 2; 13, 7th month.
III 2; 13, 16th month. III 2; 18, 6th month.

Instead of the 16 in the first date, I should like to read 17: the dates indicate the years 7 Muluc, 1 Kan, 9 Ix, 9 Muluc, 7 Ix, 2 Ix, 4 Ix, and 4 Muluc. The intervals of time are 2,779, 12,483, 13,988, 13,650, 2,821, 10,400, and 14,040 days. I am most in doubt as to the first two and least so as to the last two. The last one, 14,040, as already remarked, is one of the most important dates in our manuscript. These dates and their intervals certainly have some connection with the numbers placed within the serpents, but I do not yet venture to express an opinion in regard to them.

Pages 62 and 63 contain, the former in the last two columns, the latter in the first two, a very fine and lucid combination of large numbers, of encircled numbers below them, and of dates. Although I have already considered the first, the numbers, I transcribe here the entire passage:

1,272,921	1,272,544
III 2; 13, 3d month.	XIII 20; 11, 1st month.
(456)	(121)
IV 17; 8, 18th month.	IV 17; 8, 18th month.
1,234,220	1,268,540
III 2; 13, 14th month.	XIII 20; 6, 18th month.
(235)	(17)
IV 17; 8, 18th month.	IV 17; 8, 18th month.

I have allowed myself a slight conjecture in regard to the date at the top in the second group only. I read the manuscript's 15, 1st month; 11, 1st month, assuming that the writer made a line instead of a dot. As we consider the differences between the upper dates and the normal date that is set down below, it should be mentioned that the former indicate the years 4 Ix, 4 Ix, 5 Ix, and 7 Cauac, and the latter, as already observed, the year 9 Ix. The intervals are, therefore, as follow:

44 years+295 days=16,355=62×260+235 days
44 years+337 days=16,397=63×260+ 17 days
4 years+ 75 days= 1,535= 5×260+235 days
15 years+ 2 days= 5,477=21×260+ 17 days

The days in excess of the multiples of 260 are, therefore, equal to the encircled numbers in the third and fourth groups.

The explanation of these groups is written above them, unfortunately in characters as yet undeciphered. But there is such a small number of different signs among these twenty-eight, owing to the frequent repetition of some, that I think a complete comprehension will be achieved here, as well as on page 24, very soon, especially as several of the characters are among those most frequently used in the manuscript.

In the third column of page 63 there is still to be regarded a doubtful date at the top, and a normal one at the bottom.

Page 69 has the normal date in the middle of the two middle columns, but at the bottom the date IX 1; 12, 17th month, which is repeated at the top of the fifth and sixth columns. It is the same which we have already met with three times on pages 61 and 62. Furthermore, on the right, at the bottom, page 69 gives the days IV 9 and IX 11, which are very important for the last pages of the manuscript. The month signs below them, with the numbers preceding, are unfortunately entirely obliterated. Since the fifth large serpent of the manuscript is here, a comparison with the dates under the serpents on pages 61 and 62 would be of great importance.

Page 70 has the normal date no less than six times, in the middle and at the end of the first and second columns, as also, half obliterated, at the beginning of the third and fourth columns; and, finally, at the end of the fourth column is the date, IX 11; 12, 1st month, which indicates the year 12 Kan; probably, the right-hand lower corner of page 69 is to be completed in accordance with this. In the middle of the page there seem to be four more dates; the two upper ones must have been injured, and consequently I do not venture to affirm positively that the two lower ones are to be read VIII 17; 13, 7th month (7 Muluc) and IV 9; 10, 15th month (2 Kan).

Herewith the calendar dates of our manuscript, and with them my present task, come to a close. I have been obliged to express myself very briefly, and therefore require of the investigator who would closely follow my exposition that he should be in a measure familiar with the previous results of Maya research. Still, I hope I have given an impulse to some one to push farther forward in this field. I might say a good deal more concerning this or that passage of the manuscript, but my present purpose has merely been to throw a clearer light on three important and frequently recurring features. I will only briefly remark that, in regard to the repetitions of the eighth day, Chuen, regularly bunched together, also found in other manuscripts and always occurring in combinations of three on pages 25 to 28, they undoubtedly designate the expiration of 24 (3×8) days of the last month, for these pages are concerned with the twenty-fourth and twenty-fifth days (which belong properly to no month).

On pages 42, 43, and 45, at the bottom, there are always six of these Chuen pictures, as an indication that six times eight days have elapsed, as is noted in the line above; but only four of these six signs are to be seen on page 44, owing no doubt to want of space.

PAGES 61 TO 64 AND 69 TO 73, DRESDEN CODEX[a]

INTRODUCTION

In 1887 I printed an essay under the above title intended for private circulation, which was afterwards included, with a few corrections on pages 739 to 753, in the Compte rendu of the Congress of Americanists at Berlin. Since that time some facts have come to light in my special department, the mathematical side of the Maya manuscripts, a part of which I would make known in this way. For this purpose I select two of the latter sections of the Dresden manuscript (pages 61 to 64 and 69 to 73), which have this in common, that, proceeding by arithmetic series, they rise to numbers of great magnitude, the highest of which are set down in serpent pictures, in four in the first-named section and only in one in the second. The first section, beginning with page 64, the other beginning with page 73, must be read from right to left, consequently backward according to our view. It is true that even after this communication of mine numerous puzzles will remain unsolved; still, an intelligible connection between the individual portions of these sections will certainly be seen.

Before I come to the main question I will premise two remarks.

First, I shall designate the week days in the usual manner by Roman numerals; the days of the month, not by their names, which are here unimportant, but by Arabic numerals, as, for instance, Kan 1, although, of course, I know that in Codex Troano-Cortesianus Imix 1 is after the Aztec method.

Secondly, among the numbers certain ones are of surpassing importance. It is well known that the most important of all is 260, the sacred tonalamatl, consisting of 20 weeks of 13 days each. Some smaller numbers rank next in importance, notably, 52, 65, 78, 91, and 104 (=4, 5, 6, 7, and 8 weeks). Next to these come several multiples of 260, especially, 780, 1,040, and 1,820, which are divisible without a remainder by 78, 104, and 91 as well as by 260. I will specify further 3,640 (divisible by 91, 104, and 260) and 14,040 (divisible by 52, 65, 78, and 260, likewise by 54, 702, and other numbers). Next follow the multiples of the year: the ahau (24 years of 365 days)=8,760 days; the katun (52 years=18,980, also 73×260 days); the ahau katun (312 years=113,880=438×260 days, a week, as it were, of which each day is an ahau; and, finally, the period of 12 ahau katuns=1,366,560 days, which number has the peculiarity of being divisible without remainder by 9, an important number in the Maya mythology. Even nine times this number, 108 ahau katuns, might be called an important period.

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[a] Zur Entzifferung der Mayahandschriften, II, Dresden, January 25, 1891.

But now to the main question. I must again express myself briefly; for otherwise the result would be a thick book, which would hardly get printed. With a little careful attention and the scantiest knowledge of the elements of Maya investigation, it will be possible to follow me.

Pages 61 to 64

METHOD OF TREATMENT

This whole section is divided into four separate groups of numbers, which rise one above the other like the stories of a building. The object of the following description is to show the interconnection of these groups so far as it is at present discernible.

THE SERIES OF NUMBERS

Almost all the Maya series of numbers, which we have hitherto known only from the Dresden manuscript, have for their principal object the discovery of some common multiple for two or more numbers. They begin at the zero point; but what is really the second term of the series is usually written down first, for this first constitutes an actual number. This number is the real fundamental difference of the series, and the separate terms of the series usually increase by this number until a number is reached which is divisible, not merely by this fundamental difference, but also by 260. From this point onward the terms of the series usually increase by the new number (used as a second difference), and still later they probably increase by a multiple of this second difference.

The pages of the manuscript now under consideration have only one series, which occupies the whole of page 64 and the right half of page 63. I have already spoken of this on page 32 of my Erläuterungen (Dresden, 1886). Its fundamental difference is 91, with which the series begins on page 64, on the right at the bottom; thence onward the series increases quite regularly (182, 273, 364, etc.) as far as 1,820, one of the important numbers mentioned above, which is a multiple both of 91 and 260; 1,820 is therefore the second difference, and with this difference the numbers progress on the upper edge of the page. This upper edge is unfortunately partially obliterated;

yet from the part remaining that which is destroyed may be restored with tolerable certainty, as follows: 3,640, 5,460, 7,280 (so far with the difference 1,820), 14,560, 21,840, 29,120, 36,400 (so far with the difference 7,280=4×1,820), 72,800, 109,200, 145,600 (difference, 36,400=20×1,820). Below this highest number (1,600×91) stands, written very small in red, crowded in between the figures of 1,820, a large number, the Maya numerals of which, read from the top downward, are 19, 0, 4, 4. I can understand this number only by substituting a 3 for the first 4; then it signifies 136,864=1,504×91. I intend to return to this number farther on.

The numbers in a series always relate to certain days, which are usually designated below, and which stand at the same distances from each other as the numbers. In our case, five days belong to each number, which are specified as follows:

364	273	182	91
III 6	III 15	III 4	III 13
5	14	3	12
15	4	13	2
7	16	5	14
XIII 4	XIII 13	XIII 2	XIII 11

and so on. Whenever a difference divisible by 260 is reached the same days recur invariably, to wit:

III 2
1
11
3
XIII 20

The three days in the middle should be regarded as having a III, like the upper one; but for the present we may leave them unconsidered, for only III 2 and XIII 20 are of immediate importance.

Furthermore, these last-named five days are, of course, the actual zero point from which the series progresses. With respect to the series see also Cyrus Thomas's Aids to the Study of the Maya Codices, Washington, 1888, page 327.

THE CORRECTIONS, OR ENCIRCLED NUMERALS

As I have shown in my treatise mentioned in the beginning, all the days are computed from IV 17 onward. Therefore, it is impossible that the above-named days, III 2 and XIII 20, should be either equal to zero or equal to a number divisible by 260. Actually, the day IV 17 is always meant here. The days under the numbers, therefore, are arbitrary and merely used provisionally to measure the distances between the numbers by the distances between the days. If one would find the number actually corresponding to a day, a correction by addition or subtraction should be made, and in the manuscript we find these corrections in the numbers which are encircled with red whenever the space permits.

In our section we must consider the distance of the days III 2 and XIII 20 from the normal day IV 17, and also from the days IV 1, IV 18, IV 19, and VII 1. I do not yet know why these last four days were selected, but a close examination shows that the first three of them preceded the normal day IV 17 by 156, 39, and 78 days. These intervals have the ratio 4 : 1 : 2, but this is merely incidental.

From III 2 to IV 17 there are 235 days
From XIII 20 to IV 17 there are 17 days
From III 2 to IV 18 there are 196 days
From XIII 20 to IV 1 there are 121 days
From III 2 to VII 1 there are 199 days
From XIII 20 to IV 19 there are 199 days

The last two intervals are the same, which doubtless has a hidden meaning.

The effect is exactly the same whether we make these corrections in the amounts given or in these increased by a number divisible by 260, since after 260 days the same days recur. Thus we actually find on pages 62 and 63 the numbers 235 and 121 inclosed in circles, but instead of 196 we find 456=260+196, and instead of 199 we have 51,419=197×260+199. The last number is perfectly reliable, for it has already occurred in the same connection on page 31 of the manuscript. Instead of the 17, above which there is a quite incomprehensible zero, I now read 537=2×260+17, the correctness of which I shall prove later on.

The numbers to which these encircled numbers are added do not occur in the manuscript. I have given them in my earlier treatise and will omit them here.

THE LARGE NUMBERS

With regard to this subject I can also be brief, as it has already been discussed in my previous article. I refer to the numbers scattered throughout the manuscript, always lying between 1,200,000 and 1,600,000, whose true mean and point of departure, unless we are wholly mistaken, lies in 12 ahau katuns 1,366,560 (page 24 of the manuscript). Perhaps it may be an aid to their better comprehension if, in connection with the days belonging to them, I specify these numbers somewhat more particularly by some of their properties.

IV 17. 1,234,220=4,747×260=235×5,252×235 is the distance from III 2 to IV 17. The number is 132,340 less than 12 ahau katuns.

IV 17. 1,268,540=4,879×260=17×74,620. 17 is the distance from XIII 20 to IV 17. The number is 98,020 less than 12 ahau katuns.

IV 1. 1,272,544=4,894×260+104=12,236×104=13,984×91. 104 is the distance from IV 17 to IV 1. The number is 94,016 (=904×104) less than 12 ahau katuns.

IV 18. 1,272,921=4,895×260+221. 221 is the distance from IV 17 to IV 18. It is also equal to 32,639×39; and 39 is the distance from IV 18 to IV 17. The number is 93,639 (2,401×39) less than 12 ahau katuns

VII 1. 1,535,004=5,903×260+224. 224 is the distance from IV 17 to VII 1. It is also equal to 42,639×36; and 36 is the distance from VII 1 to IV 17. The number is 168,444 (4,679×36) greater than 12 ahau katuns.

IV 19. 1,538,342=5,916×260+182. 182 is the distance from IV 17 to IV 19. It is also equal to 118,334×13. The distance from IV 19 to IV 17 is 78=6×13. The number is 171,782 (13,214×13) greater than 12 ahau katuns.

Here, indeed, remarkable results begin to be apparent through the veil which still shrouds the secret of the construction of these numbers; but a relation which seems remarkable is not always really so, for it may often be only the mathematical result of some other relation already known. I have often been greatly pleased with some result, until I perceived that it could not possibly have been otherwise.

Under four of the six large numbers there are calendar dates, which I read correctly, it is true, in my former paper, but regarding the exact significance of which I have only now obtained a clear insight. They do not relate to the numbers actually written down in the manuscript, but to their diminution by the encircled numbers, that is, to the days III 2 and XIII 20. These diminished numbers are the following:

III 2: 1,272,921−456=1,272,465
XIII 20: 1,272,544−121=1,272,423
III 2: 1,234,220−235=1,233,985
XIII 20: 1,268,540−537=1,268,003

Below these are the four dates:

III 2	XIII 20	III 2	XIII 20
13, 3d month	11, 1st month	13, 14th month	6, 18th month

In my former paper I proved that my correction from 15 to 11 in the second date is justifiable. The second number is 42 less than the first, and, in fact, the second date precedes the first by 42 days, both being in the year 4 Ix. The fourth number is 34,018 larger than the third, or, if we deduct a katun, 18,980 days, during which time every date is repeated, it is 15,038 larger; the fourth date (in the year 7 Cauac), however, is distant from the third (in the year 5 Ix) 41 years and 73 days, that is, again 15,038 days. This justifies my conjecture above, according to which I read 17+(2×260)=537, instead of the encircled number 17, especially as obliteration is evident in the manuscript.

Both differences, between the numbers and the days, are also proved correct by the fact that 218 days always elapse between III 2 and XIII 20: but 42 is 260—218 and 15,038 is equal to 57×260+218.

Thus we obtain a result satisfactory in every respect.

THE NUMERALS IN THE SERPENTS

While I have already discussed the main part of the foregoing subjects in a former paper, although in a different connection, I present the following for the first time to the knowledge of my fellow-workers in this field of research.

As the crowning point of the entire numeric structure in question, we find on pages 61 and 62 four large serpents drawn in a vertical position, in the coils of which are placed black and red numerals. It was a long time before I became convinced that these numerals were not independent of each other, but constituted large numbers, and that the black numerals were to be regarded as placed at the left of the red ones, which is a matter of importance in what follows.

I shall treat these numbers as progressing from the left to the right, although it is by no means certain that the opposite order should not be adopted. I will, then, designate the serpent on the left as 1, and the following ones as 2, 3, and 4, the black numbers by *a*, and the red ones by *b*.

Now, the first question is, what numbers are to be considered in this place. I am gratified to be able to regard seven of these eight numbers as entirely correct and requiring no conjecture. I shall have to alter only the number 1*b*, that is, the red one in the first serpent, for I assume that a line is wanting in the lowest numeral, and that 8 should be read instead of 3, and that the black 1 standing farther below should also serve for the red number, which is written remarkably large. Accordingly, the figures for these eight numbers are as follow:

1*a*	1*b*	2*a*	2*b*	3*a*	3*b*	4*a*	4*b*
4	4	4	4	4	4	4	4
6	6	6	6	6	6	6	6
14	0	9	1	7	11	9	1
13	11	16	9	12	10	15	9
15	8	10	15	4	7	12	15
1	1	1	0	10	2	19	0

The first thing to be noticed is the similarity of 2*b* and 4*b*, as also that 1 and 3 resemble each other in this respect that the most familiar deity in the manuscript is represented on the heads of these serpents, while on the heads of 2 and 4 there are two beasts.

Translated into European characters, the numbers are as follow:

1*a*	12,489,781
1*b*	12,388,121
2*a*	12,454,761
2*b*	12,394,740
3*a*	12,438,810
3*b*	12,466,942
4*a*	12,454,459
4*b*	12,394,740

We see that these large numbers are more nearly equal than the numbers in the preceding section. If I there considered the period of 12 ahau katuns as the true mean of the group, we might here, perhaps, regard nine times that period, that is, 108 ahau katuns = 12,299,040, as the point of departure for these numbers.

Nor can it be accidental that while 2*b* and 4*b* are alike, the numbers 2*a* and 4*a*, belonging to them, have the very slight difference of 302; that is, 260+42. 42 is the space of time between XIII 20 and III 2.

Nothing should be disregarded which may possibly throw light on the construction of the entire edifice. Perhaps some other number may represent the mean of these large numbers better than 108 ahau katuns. In discussing this series I observed that the number 136,864 occurs on page 63. It is remarkable for its position, but still more so for its magnitude. For how comes 91×1,504 in a series which concludes with 91×800, 91×1,200, and 91×1,600? If we imagine this number again multiplied by 91, as the fundamental number of the whole, we obtain 12,454,624, the relation of which to the eight large numbers I leave the reader to consider. I make no assertions with regard to it.

In my earlier paper I mentioned, further, that under each of the eight numbers there is a calendar date. I here give these dates, and at the same time add the years in which they must occur:

1*a*	III 2; 18, 6th month	4 Muluc
1*b*	III 2; 13, 16th month	4 Ix
2*a*	III 2; 13, 7th month	2 Ix
2*b*	III 1; 12, 12th month	7 Ix
3*a*	III 11; 7, 5th month	5 Muluc
3*b*	III 3; 14, 17th month	9 Ix
4*a*	XIII 20; 1, 14th month	1 Kan
4*b*	III 1; 17, 2d month	7 Muluc

Only the 17 in the last date is conjectural: the manuscript reads 16.

We perceive at once that exactly the same days occur here which we saw above at the beginning and the end of the large series; that is, III 2, III 1, III 11, III 3, and XIII 20, of which III 2 is used three times and III 1 twice. Hence we clearly have a connection of the dates with the series.

In order to show the close relation of the series to the eight numbers, we will now present the connection of the dates with the numbers. The indication of this connection is irrefutable, although not clear at all points. With this object in view I will here set down the differences between each two adjacent numbers, and also those between the dates appertaining to them:

1	1*a* and 1*b*	101,660	III 2 and III 2	14,040
2	1*b* and 2*a*	66,640	III 2 and III 2	8,580
3	2*a* and 2*b*	60,021	III 1 and III 2	2,821
4	2*b* and 3*a*	44,070	III 1 and III 11	5,330
5	3*a* and 3*b*	28,132	III 11 and III 3	4,992
6	3*b* and 4*a*	12,483	XIII 20 and III 3	12,483
7	4*a* and 4*b*	59,719	III 1 and XIII 20	2,779

The reason for introducing the two days in each line will immediately appear. I will now endeavor to make clear the connection between the two numbers in each line.

1. Both the numbers are divisible by 260 without a remainder. The two days are alike. I mentioned in the beginning that the number 14,040 was a very important one.

2. In this case there is a seeming disagreement; for, although the days are again alike, the second number is 33×260 while the first is 256×260+80; and yet this difference is quite necessary, as I shall hereafter show.

3. Each of the numbers divided by 260 has a remainder of 221, and between the day III 1 and the next, III 2, there is always an interval of 221 days.

4. Each of these numbers divided by 260 has a remainder of 130, and 130 is the distance between the days III 1 and III 11.

5. The remainder of both these numbers is 52, which is the distance between III 11 and III 3.

6. The two numbers are exactly alike. Divided by 260 they have the remainder 3, which is the distance between XIII 20 and III 3.

7. Both numbers have the remainder 179, equal to the distance between III 1 and XIII 20.

We now come to the question, What really are the zero points from which these large numbers are computed? for we already know that the zero point is by no means always the normal date IV 17: 8, 18th month. I can not give here the multitude of figures necessary for this calculation, but must content myself with the results. They are as follow:

1*a*	XI 1; 12, 14th month	1 Ix
1*b*	XI 1; 12, 15th month	7 Ix
2*a*	IX 1; 7, 14th month	4 Cauac
2*b*	IX 1; 2, 9th month	5 Kan
3*a*	IX 1; 12, 6th month	3 Ix
3*b*	IX 1; 12, 17th month	4 Ix
4*a*	IX 1; 12, 17th month	4 Ix
4*b*	IX 1; 12, 17th month	4 Ix

Thus the eight zero points all fall on the first day of the month Kan. The first two week days, however, are XI 1 and the six others IX 1. From IX 1 to XI 1 there are 80 days, and thus the number 80 is justified, as I promised above to prove; for in the dates written below belonging to 1*b* and 2*a* the days are alike (in each case III 2).

The six initial days IX 1 have different positions in the year in 2*a*, 2*b*, and 3*a*, and are, therefore, in different years; but in 3*b*, 4*a*, and 4*b* they are exactly alike and are all in the year 4 IX. Hence the difference in the numbers belonging to these three does not depend upon the beginning, but upon the end of the series. It is perhaps not accidental that the year at the beginning is 4 IX, which we have above seen occurring among the large numbers of the second rank.

The date IX 1; 12, 17th month, found here three times by mere computation, is undoubtedly an extremely important one. Looking through the manuscript, we find it plainly written down on page 61 below on the left, and then above in the middle, and again on page 62 above in the middle. Should not this help to throw light on the hieroglyphs of which it always constitutes the end and aim? If the upper right-hand corner of page 61 were not entirely destroyed, and the left-hand one of page 62 nearly so, we should undoubtedly even now see more clearly here.

I would especially urge upon the attention of the investigator the importance of finding out the significance of the symbol of the sixth month, Xul, eight times repeated with slight variations among the eight calendar dates at the bottom of these two pages.

But I can not take leave of this section without remarking that it likewise occurs, like an abstract, in the upper third of pages 31 to 32. We find there also a series beginning with the day XIII 20. There also appears the difference 91; there also, the encircled numbers 17, 121, and 51,419; and finally, also, the large numbers 1,272,544, 1,268,540, and 1,538,342. As if here, too, something corresponding in a certain degree to the serpent numbers ought to be found, there are in this place the numbers 2,804,100=10,785×260=147 katuns+14,040, that remarkable number so often standing in the background; yet here, too, we have only a great riddle.

PAGES 69 TO 73

METHOD OF TREATMENT

In the following I shall arrange my observations in the same order as I have done in the preceding section. In this way it will be easily seen by comparison wherein the two sections resemble each other and wherein they differ.

THE SERIES OF NUMBERS

The first noticeable difference between the two sections is the fact that the former began with only one series and the present one is constructed upon two series.

On page 73 we find at the right the three numbers 14,040, 702, and 54, written very large, one above the other. The first is twenty times the second, the second thirteen times the third; thus the whole represents a kind of tonalamatl, each day of which is 54 days long. This may be looked upon as the superscription of the first series.

At the beginning and the end of this series is the day IX 11, and as the fundamental difference 54. The series begins at the top of page 71 on the right, and extends toward the right as far as the middle of the upper third of page 73. The attendant days are not stated here, but only the numbers of the week days, which are usually red, but this time are black encircled with red, and which consequently have here an unusual significance. Since 54 is equal to 4×13+2, these numbers must always increase by 2. As I said before, we must suppose a IX with the zero; then with 54 we shall read XI, with 108 XIII, with 162 II, and so on up to VII with 648. Hereupon follows that 702 on page 73, at the right, and below we read the IX belonging to it. This 702 forms the second fundamental difference of the series, although it is not divisible by 260. It is to be found on the second third of page 71 as the fifth number counted from the left, but it is incorrectly written, for two dots are wanting over the middle numeral, which must be 17 and not 15. The series, accompanied quite regularly by day signs and numbers, now increases by terms of 702, proceeding toward the left to page 70; thus, 1,404, 2,106, 2,808, and so on. This line ends on the left with 4,914; then 5,616 follows in the next line above on page 71, followed by 6,318 and 7,020. In this manner a number is reached which is divisible by 54, 20, and 13, therefore also by 260. Double this number is the notable 14,040, which should stand here, but is omitted because, as we see, it is already on page 73. This 14,040 now forms the third difference of the series (after the 54 and 702), the numbers in which must always be accompanied by the day IX 11. Thus we read in continuation 28,080, 42,120, 56,160, 70,200. At this point the series is continued in the uppermost line, which is unfortunately very much injured and the numbers of which we can only surmise. If the difference 14,040 remained unchanged, the last number would be 168,480=12×14,040. Compare the description of this and of the following series in the admirable work of Cyrus Thomas, Aids to the Study of the Maya Codices, Washington, 1888, page 331.

At the beginning and the end of the second series is the day IV 9, and the fundamental difference is 65; that is, a quarter of 260. This series begins in the second third of page 73, on the right, with 65=IV 14, increases toward the left by terms of 65 to 910=IV 19, then continues at the bottom of page 73, on the right, with 975=IV 4, and again continues to increase toward the left by terms of only 65 until, on page 71, 1,820=IV 9 is reached, which is divisible by 260 (as were various previous numbers). This 1,820 constitutes the second difference for the next two numbers, 3,640 and 5,460. The 7,280 which we should then expect is wanting, but just this is the third difference for what follows. The line ends on page 70 with 43,680=6×7,280, but continues a line higher on page 71 with 50,960=7×7,280, and now continues to increase toward the left to 9, 10, 13, 15 times 7,280, whereupon the 8 times 7,280 (58,240), omitted on page 71, is here inserted, for I read here 8, 1, 14, 0, instead of 8, 1, 10, 0.

To these highest numbers of the series is added a number consisting of the numerals 1, 0, 12, 3, which are quite inexplicable at present, for there is nothing to be done with 7,443. Yet, I would call attention to the fact that it stands exactly in the place where in the preceding section we found the at first equally inexplicable 136,864. As in the preceding section, we shall revert to this number later.

Thus we have two series in this section, but each relates only to one day. The previous section gave us but one series, which, however, had reference to two days. What was there 91, III 2 and XIII 20, is here 54, IX 11, and 65, IV 9.

THE CORRECTIONS, OR ENCIRCLED NUMERALS

While the former section presented five such numbers, the present one contains no fewer than eight. Of these, however, only the four lower ones actually have the rings, while the four higher ones are without them. They are as follow:

1. On page 70, on the left, 606=2×260+86; above this is IX 11; 86 is the distance from IX 11 to the normal date IV 17.

2. To the right of this number is 1,646=6×260+86; above it again is IX 11; this refers to the same interval.

3. Below the first number is only 86; over this again is IX 11, referring again to the same distance.

4. Below the second number is 208; over this is IV 9. The 208 denotes actually the distance from IV 9 to IV 17.

5. On the same page in the fourth column, in black figures, is 111,554=429×260+14; above, in the third column, is X 17, but over the X is an VIII, like a correction. I read them VIII 17. The above-mentioned 14, however, denotes the distance from VIII 17 to IX 11, the initial day of the first series.

6. Written between in red is 101,812 (for I read 14 instead of 16)= 391×260+152. This 152 is the distance from VIII 17 to IV 9, the starting point of the second series.

7. At a considerable distance from this, at the top of page 73, we find the number 83,474=(321×260)+14 and below it IX 11. Thus it is again intended to indicate the distance from VIII 17 to IX 11.

8. At the right of this is 34,732=(133×260)+152. Underneath is IX 9, doubtless to be read IV 9, indicating the distance from VIII 17 to IV 9.

Since the multiples of 260 are always indifferent in certain respects, we are really concerned with only four of these corrected numbers—86, 208, 14, and 152; that is, with the four intervals IX 11 to IV 17, IV 9 to IV 17, VIII 17 to IX 11, and VIII 17 to IV 9. The starting points of the two series, IX 11 and IV 9, are brought into relation only with the normal date IV 17 and with the still enigmatic VIII 17. I would also remark, with regard to the position of this VIII 17, that it is distant 100 days from a succeeding, consequently 160 days from a preceding, IV 17, that it therefore divides the tonalamatl into two parts, having the ratio of 5 to 8.

THE LARGE NUMBERS

As in the preceding section, there are exactly six of these, all on page 70. I will consider them here in the same manner as in that section.

1. IV 17. 1,201,200=4,620×260, which is 165,360 less than 12 ahau katuns.

2. IV 17. 1,202,240=4,624×260=208×5,780. 208 is the distance from IV 9 to IV 17; 164,320=208×790, being less than 12 ahau katuns.

3. IV 17. 1,394,120=5,362×260, which is 27,560 more than 12 ahau katuns.

It may not be accidental that the first and third numbers are both divisible by 14, which is the distance from VIII 17 to IX 11.

4. IV 17. 1,437,020=5,527×260, or 70,460 more than 12 ahau katuns.

5. IV 11. 1,520,654=5,848×260+174. 174 is the distance from IV 17 to IX 11. This number is 154,094 more than 12 ahau katuns.

6. IV 9. 1,567,332=6,028×260+52. 52 is the distance from IV 17 to IV 9. This number is 200,772 more than 12 ahau katuns.

These numbers may still bear relations to each other which I have not yet discovered.

We now know that from these numbers the corrections, or encircled numbers, are to be subtracted from all six numbers, indeed, eight—that is, two each of the latter from two of the former. Thence result the following eight equations, to which I attach the corresponding days:

1. 1,201,200 (IV 17)− 86=1,201,114 (IX 11)
2. 1,202,240 (IV 17)− 208=1,202,032 (IV 9)
3. 1,394,120 (IV 17)− 606=1,393,514 (IX 11)
4. 1,437,020 (IV 17)− 1,646=1,435,374 (IX 11)
5. 1,520,654 (IX 11)−111,554=1,409,100 (VIII 17)
6. 1,520,654 (IX 11)− 83,474=1,437,180 (VIII 17)
7. 1,567,332 (IV 9)−101,812=1,465,520 (VIII 17)
8. 1,567,332 (IV 9)− 34,732=1,534,600 (VIII 17)

I should like to call attention here to a singular circumstance in connection with the last four subtrahends, which extends to the last four remainders, and is evidently so intended. This is 111.554 — 101,812=9,742, an apparently quite unimportant number, which, farther on, we shall see recurring in a very remarkable position. Further, 83,474—34,732=48,742, is again an apparently unimportant number; but it is surprising to observe that 48,742 — 9,742 is exactly 39,000 = 150 tonalamatl. Furthermore, 111.554 — 83.474 = 28.080, that is, twice that remarkable 14,040; and 101.812 — 34.732 = 67.080 = 258 tonalamatl. If these circumstances have no other immediate result, they at least prove the correctness of the numbers.

I should also like to state here how I have calculated the days mentioned in the last eight equations according to their position, but I shall willingly accept corrections if I have erred:

1.	IV 17; 13, 17th month	11 Muluc	IX 11; 7, 13th month	11 Muluc
2.	IV 17; 18, 14th month	1 Kan	IV 9; 10, 4th month	1 Kan
3.	IV 17; 8, 9th month	7 Ix	IX 11; 12, 15th month	5 Kan
4.	IV 17; 23, 18th month	7 Cauac	IX 11; 17, 9th month	3 Cauac
5.	IX 11; 7, 3d month	3 Muluc	VIII 17; 3, 10th month	9 Cauac
6.	IX 11; 7, 3d month	3 Muluc	VIII 17; 18, 8th month	8 Kan
7.	IV 9; 5, 1st month	1 Muluc	VIII 17; 8, 2d month	8 Ix
8.	IV 9; 5, 1st month	1 Muluc	VIII 17; 13, 16th month	9 Muluc

All the numbers and dates are, of course, computed from the normal date, IV 17, 8, 18th month.

In the previous section I was able at this point to indicate some calendar dates occurring in the manuscript which were related to the remainders, but it is not possible to do so in this section. It is true, some calendar dates seem to occur on page 70, in the middle of the third and fourth columns, but it is uncertain whether they agree with these remainders. At the most 13, 16th month, strikes one as agreeing with the dates I have given above.

THE NUMERALS IN THE SERPENT

In the previous section there were four serpents, but in the present only one. We will consider the two numbers in this serpent with respect to their size, their difference, point of departure, termination, and relation to the other portions of this section. The Maya numerals and the resulting numbers are as follows:

Black	4	Red	4
	5		6
	19		1
	13		0
	12		13
	8		10
	12,381,728		12,391,470

Both numbers are quite reliable. We need only mention that the 1 in the red number is hardly visible.

At the first glance we see that they have almost the same magnitude as the eight numbers in the four preceding serpents. The black number is somewhat less than any of the eight numbers, the red somewhat larger than the smallest among them.

The difference between them is 9,742=37×260+122; and 122 is exactly the difference between the day IV 9 and the day IX 11, which in itself proves the connection of these numbers with the series previously considered. But we found before exactly the same difference between the two encircled numbers, 111,554 and 101.812, to which, therefore, the numbers in the serpent must likewise be closely related.

Above, at the conclusion of my discussion of the series, I mentioned the figures 1, 0, 12, and 3 at the end of the series on page 70, which would amount to 7,443, and could not, therefore, be explained. But they are close to the numbers 111,554 and 101,812 just mentioned. The inference seems natural, therefore, that they may be the difference between these latter numbers, which is our 9,742. In that case we should be obliged to substitute 1, 7, 1, 2, in the place of the abovenamed figures, and that would be too great an alteration. Who can make a better suggestion? The 0, standing below the number, is almost entirely obliterated, and surely was only an error on the part of the writer, and is therefore not to be regarded.

The starting point of the numbers in the serpent, moreover, is of special interest. We see the same date, IX 1; 12, 17th month, as in the serpents of the previous section, and here we stand on safe ground.

Now, if we compute the black number from this point, after 652 katuns, 18 years and 198 days, we arrive at the date IV 9; 5, 9th month (10 Muluc), and on page 69, under the serpent, we actually find it. In the same way, for the red numbers we have 652 katuns, 45 years and 85 days=XI 11; 12, 3d month (11 Kan), which again finds triumphant confirmation in the manuscript.

If the numbers in the serpent were to be computed from the preceding regular date, IV 17; 8, 18th month, and not from IX 1; 12, 17th month, it would then be necessary to add 2,904 days to each. Then we should obtain for the true day IV 9 the number 12,384,632 and for the true day IX 11 the number 12,394,374.

I think I have shown in this paper the inner connection between these two sections. The interpretation of the rest of the hieroglyphs must be achieved before a perfect comprehension can be reached; but this, I think, can not be far distant with regard to these two sections. My present communication, I think, has supplemented and brought to a certain degree of completeness my investigations regarding the mathematical aspects of the Dresden codex. Mathematics has rightly been called petrified music. We hear the music in this case from so great a distance that, though we perceive the full harmonic chords, we do not recognize the connecting and animating melody.

TORTOISE AND SNAIL IN MAYA LITERATURE[a]

It is a well-known fact that at the time when the days and nights are of equal length the sun rises directly in the east and sets in the west. While the length of the days increases these phenomena occur farther to the north and as it decreases farther to the south. At the periods of the longest and of the shortest day an apparent standstill (solstice) takes place in this movement, after which it is reversed.

The Mayas of Yucatan, Chiapas, and Guatemala, who had attained high culture of a certain kind, seem, if all signs do not deceive us, to have denoted this standstill in their hieroglyphs and the accompanying pictures by the two creatures who are slowest in their movements, the tortoise and the snail. To men who observe from a purely natural point of view, the two are nearly akin to one another, both by their slowness and by being encased in a shell. The summer solstice, the time of the sun's greatest heat, was assigned to the tortoise, as the larger animal, and the winter solstice to the snail.

We will first consider the tortoise and the summer solstice. As the Maya year begins on the 16th of July and contains 18 months of 20 days each, besides 5 intercalary days, the summer solstice occurs in the seventeenth month, known as Kayab. If we look at the hieroglyph of this month we find, as Doctor Schellhas was the first to recognize, only the head of a tortoise with the sign of the sun (kin) in place of an eye (see *a*, *b*, *c*, figure 103, from Biologia Centrali-Americana-Archæology, part 8, pages 18 and 72, and part 10, plate 77, page 17). In this way it frequently appears in the Dresden manuscript, so that no reference is necessary. In this manuscript the center of page 40 is especially noteworthy. There we find by the hieroglyph a picture representing a human form with a tortoise's head. In each hand this personage holds a torch, one pointing upward and the other downward, a fit symbol for the waxing and then waning days. Above the picture are two astronomic signs, one of which doubtless represents the sun. Before the hieroglyph is the numeral 4. It may be merely accidental that the fourth day of the week of thirteen days is also noted below (see *d*). In the Dresden codex, page 39a, the lightning beast also carries two torches, one pointing up and the other down (see *e*). The tortoise is especially frequent in that part of the Madrid Troano codex, long since separated from it, which is now commonly called Codex Cortesianus. It does not occur in the technical and economic divisions of the manuscript, but only in the astronomic and calendric part, on pages 1 to 19 and 31 to 42, and only toward the end of these two divisions. The passages are the following:

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[a] Schild Kröte und Schnecke in der Mayaliteratur, Dresden, June 21, 1892.

Page 13a, where the hieroglyphs belonging to it are effaced.

Page 17a, where, with the picture of the tortoise, its hieroglyph appears at least four times (see *f*).

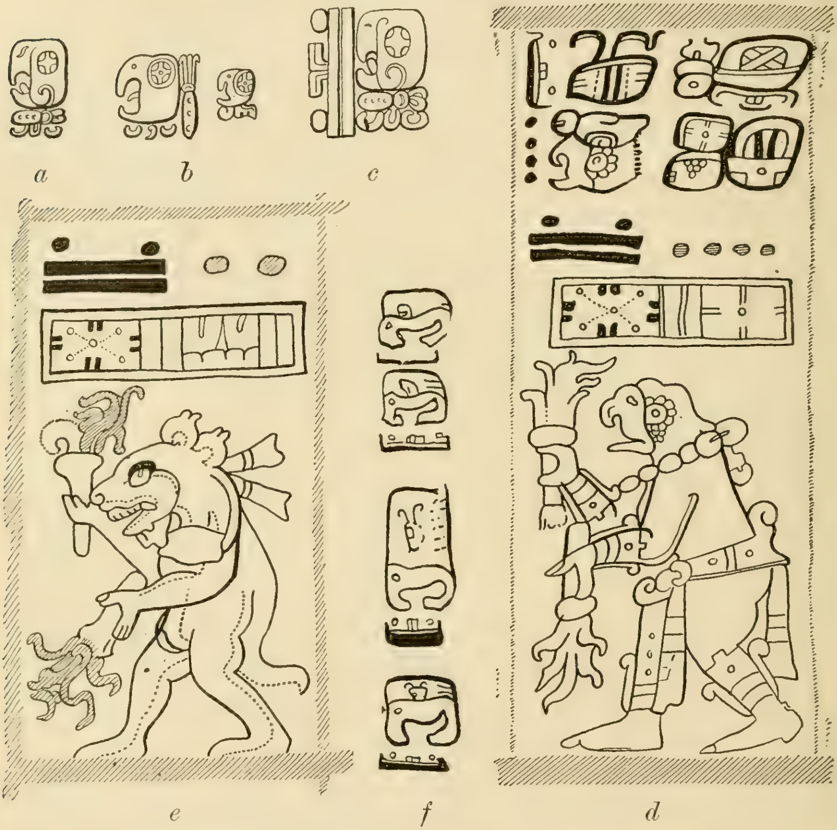

FIG. 103. Glyphs of the month Kayab and turtle figures, from Maya codices and inscriptions.

Page 17b, among a series of day signs. To the right of it a frog is represented; to the left, astronomic signs and the sun; between them, a crouching (praying?) human figure with outstretched hands.

Page 19b, where we find it surrounded by three deities—a black one, a second with the mouth painted black, and a white one. All three hold parts of a rope or of a serpent (the course of the year?), whose upper part rises above the tortoise. The hieroglyph of the latter is close to it, both above and below. Nor must we omit to mention that the sign yax (strength) occurs on the back of the tortoise.

Page 36b, where, beside the tortoise, is a person with closed eyes (dead). The hieroglyph for the tortoise is lacking here.

Page 37a, on the upper portion of which there are three astronomic signs: below, the sun repeated, from which rain streams down or, perhaps more likely, rays shoot down upon the earth, here represented by the threefold sign cauac; at the very bottom, the tortoise itself. Here, too, the hieroglyph is missing (see *a*, figure 104).

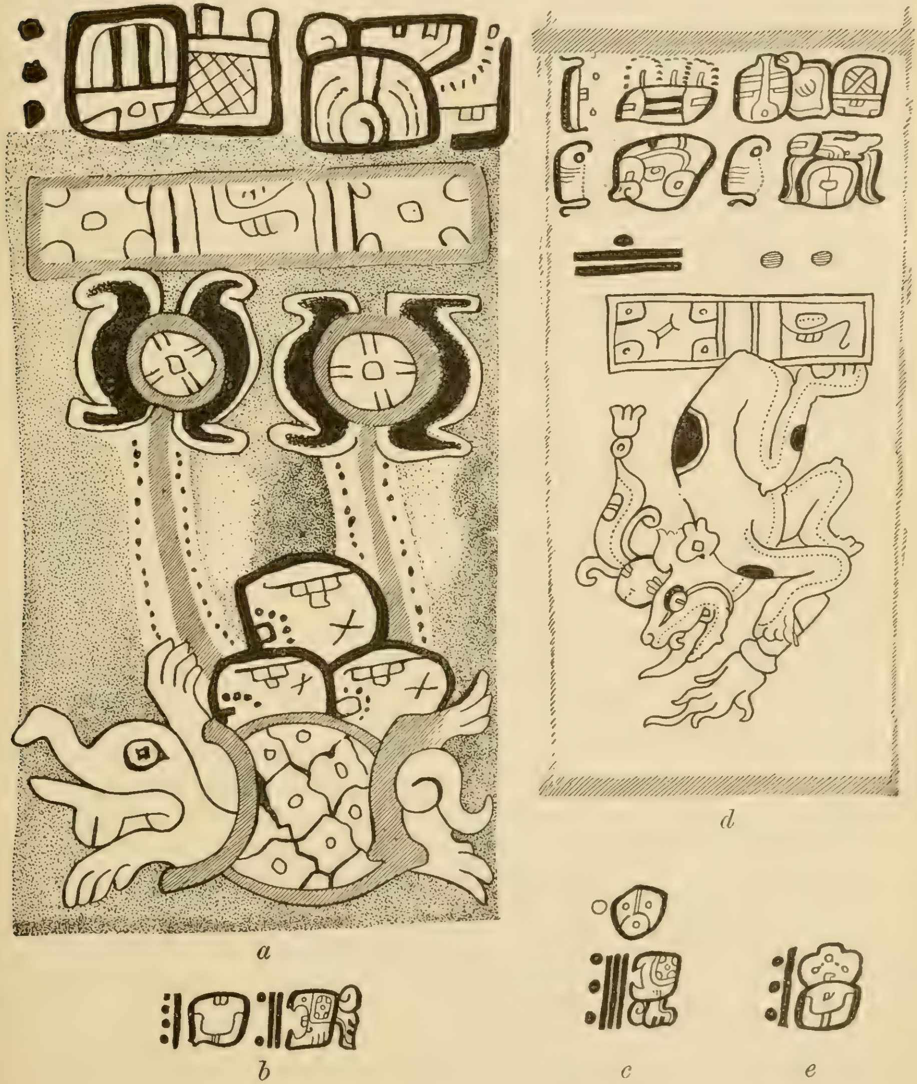

Fig. 104. Glyphs and figures from the Maya codices.

Page 38b, where, lastly, we see a bird in what looks like an heraldic drawing, which bears the representation of the tortoise back as a breastplate. Here, too, the hieroglyph is missing.

Although I have said that the hieroglyph is missing in the last three instances, yet I must state that in all three passages, as well as in many others, among the hieroglyphs occurs the one which denotes the official year of 360 days, and to this is appended a sort of latticework, which may have been evolved from the drawing of the tortoise's back.

In the Troano codex itself I find the tortoise represented but twice (pages 25*c and 32*c). The appropriate hieroglyphs occur in these passages, but in others in a form easily to be confounded with a similarly shaped bird's head (pages 2b, 31c, 32b, 19*c). So, too, in Codex Cortesianus, page 33a, a deity carries under his arm an animal which may be equally well taken for a bird or a tortoise. The hieroglyph is above it. The passage in the Troano codex, page 25*c, is particularly important. Here, an animal (jaguar?) sits on the tortoise, and to the right and left are two human figures, whose heads are surrounded by rays. In the hieroglyphs above we see the four cardinal points, and below the sign of the tortoise repeated.

Two days in the tortoise month, Kayab, are of special importance. The first is the twelfth day (see *b*, figure 104, from the Dresden codex, page 62), corresponding to our 13th of June, which was perhaps regarded by the Maya as the beginning of the solstice. It is the actual point of departure of the enormous periods which are represented in the coils of the serpent on pages 61, 62, and 69 of the Dresden manuscript, which at once becomes apparent when we examine the various passages in which occur the hieroglyphs belonging to it. The second is the eighteenth day, set down below on the left of page 24 of the Dresden manuscript (*c*, figure 104), coinciding with the day I Ahau in the year 3 Kan. Regarding it we find written there that it precedes the regular normal date, the usual beginning of the Maya system of computing time (IV Ahau; 8, 18th month), by 2,200 days. It is a very remarkable fact that in the well-known inscription on the Cross of Palenque, at the end of the first two and at the beginning of the third and fourth columns, these identical two days are given, having the same position in the year and the same interval of time (8 tonalamatl and 6 months) between them.

Therefore, either the state of civilization was about the same throughout the whole Maya area or the Dresden manuscript must have been produced not far from Palenque. In favor of this theory is the circumstance that the drawings in this manuscript undoubtedly resemble the reliefs of Palenque, but differ strikingly from those of the more northern regions. This eighteenth day of the month Kayab corresponds to our 19th of June. It seems, therefore, to have been regarded by the Mayas as the true middle of the solstice, as the longest day.

It will be a slight digression if, at this point, I glance at the eighteenth month Cumku, immediately succeeding Kayab, which is certainly the hottest one of the year. To Stephens's book, Incidents of Travel in Yucatan (London, 1843), is appended a treatise on the Maya calendar by Perez, a man living in Yucatan, and there we find the statement that cumku means thunderclap. The hieroglyph of the month agrees with this, for in it we see two flashes of lightning (or hot sunbeams?) darting down from the same point upon the maize field (kan). In the above-mentioned passage of the Dresden codex, page 40, the lightning beast as it rushes down from heaven follows directly after the person with the tortoise's head and the two torches (see *d*). In this month the eighth day, the normal date already mentioned, is the most important of all. Are we to infer from this that the Maya chronology dates from the day of the sun's greatest heat, the day in which the sun has the greatest power? (See *e*.)

Not only in the manuscripts does the tortoise occur, but also on the stone monuments of the Mayas. At least, I read of its discovery in Copan in Stephens's Incidents of Travel in Central America, volume 1 (New York, 1842), page 155: "The altar is buried with the top barely visible, which, by excavating, we made out to represent the back of a tortoise".

The tortoise seldom occurs in Aztec monuments, but, my attention having been drawn to it by Mrs Nuttall, I can prove that it occurs at least in the Vienna manuscript in Kingsborough, volume 2, apparently in a calendric context.

I will also mention an Aztec stone calendar excavated in 1790, which is represented under the erroneous title of "El Zodiaco", in Nebel's Voyage dans la partie la plus intéressante du Mexique (Paris, 1836, folio). Here we find two tortoise heads, one on either side of the central picture, representing the sun.

We may also note that in the Old World the crab (among the constellations and correspondingly in the Tropic of Cancer) is used instead of the tortoise, it being also a slow-paced creature encased in a shell and the symbol of retrogression at the same time.

I have ventured, in the second place, although not so confidently as in the case of the tortoise, to connect the snail with the winter solstice. This occurs in the month Mol, the eighth of the Maya year. In this month the death, relatively speaking, and also the new birth of the sun, takes place. We must therefore endeavor to seek the relations of the snail to birth, to death, to the sun, and, if possible, to the month Mol.

It is already known to science, and widely acknowledged, that the snail is the symbol of birth among Central American people, and a very appropriate one. Doctor Seler accepts this view in the Compte rendu of the Seventh Congress of Americanists (Berlin, 1890), pages 580 and following, where he also proves from Aztec manuscripts the manifold relations of the whelk, the sea snail, to the deities of death, besides whom the sun god also usually appears. Doctor Seler has already discussed these relations in his essay “ Der Charakter der Aztekischen und Maya handschriften ”.

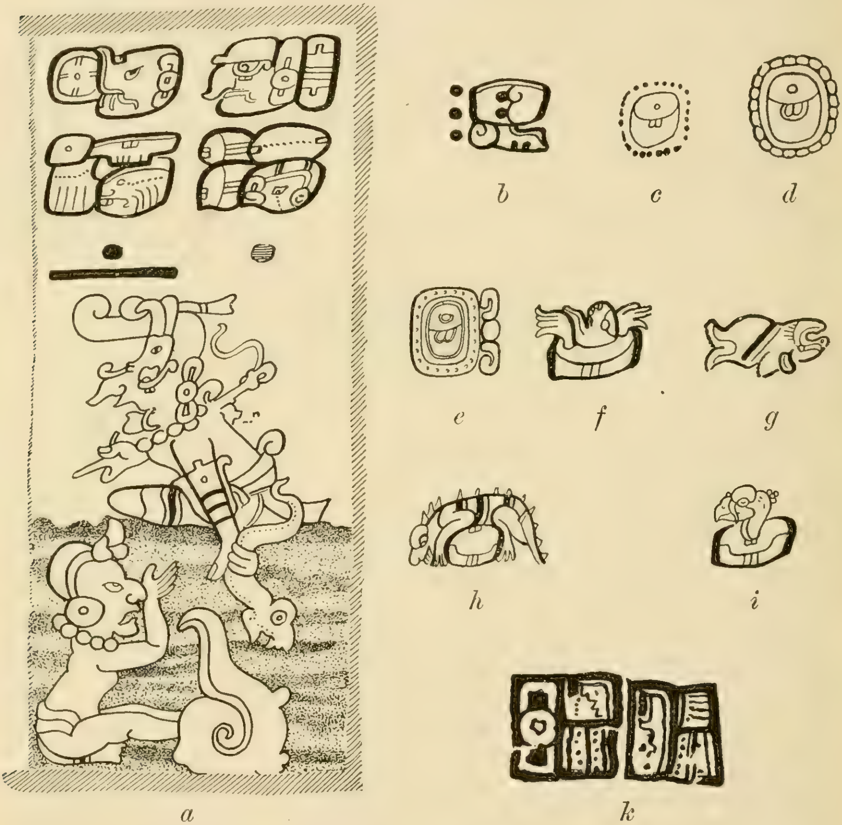

FIG. 105. Glyphs of animals and month Mol, from Maya codices.

If we now turn to the Dresden Maya manuscript we find the connection of the snail with the deities of death here plainly indicated. It appears here on the head of the true death god at least five times (pages 9c, 12b, 13b, 14a, and 23c). It also occurs elsewhere. The god D (following Doctor Schellhas's designations, which I hope will be generally adopted) has the snail on his head, page 5c. This god, with the face of an old man, occurs here between two pictures of the death god. On page 9a we see him, again with the snail, between a vulture and a woman with bandaged eyes (*a*, figure 105).

The sea snail appears very curiously on page 37b. Here it lies in the water and appears to be in the act of giving birth to a tiny person (female?).

I can not discover a genuine hieroglyph of the snail in all these passages. Doctor Schellhas expresses the opinion, which is worthy of consideration, that the very frequent hieroglyph in which the day sign Oc is combined with the numeral 3 is connected with the snail, and that the suffix attached to this sign strongly suggests the snail and the foot on which it creeps (*b*, figure 105, from the Dresden codex, page 43c).

Still another passage, perhaps of special importance, remains to be discussed. I refer to pages 10c to 11c of the Dresden manuscript. Here we find twenty-four hieroglyphs in two rows, six groups of four each, but each group begins here with the sign of the above-mentioned month Mol, which is the case nowhere else. But to these six Mols belong six pictures of gods, namely, A, D, F, E, G, and B.

The series begins with the death god A; then comes D with the face of an old man (according to Doctor Schellhas the god of birth and of the moon); then F, who, as Doctor Schellhas shows, is in a way a second death god. Next comes the grain god, E, bearing on his head the snail, together with the ears of maize; then the sun god; lastly the deity who is the most important one in this manuscript. The snail, therefore, occurs here among the gods of birth, of death, and of the sun in a section in which the month Mol seems to be of chief importance.

The question now arises whether the sign for the month Mol is in any way connected with birth or death or with the sun or the snail. The sign consists of two parallel lines of dots, forming an ellipse. In the lower part of this ellipse is a small circle, whose center is indicated, and to the upper part of which two little hooks or loops are attached. In almost the same way in which it occurs in the manuscripts the sign Mol occurs in the inscriptions, which in every other respect differ so widely from the manuscripts. Unfortunately, there is no convincing theory to explain this figure, although there are three possible ones. In the first place, the ellipse might stand for the snail shell, and that which is drawn within it may be a cursive indication of a snail; in the second place, we might regard it as an egg and its yolk as an emblem of birth, and, thirdly, it would be possible to regard it as the imprisoned, and hence powerless, sun. Who shall decide between these possibilities? The second is supported by the fact that Mr Dieseldorff writes me from Coban, in Guatemala, that in the language of that part of the country (the Kekchi) Mol means egg. I can not find the snail in Codex Troano-Cortesianus, but this may be due to the hasty and rude drawing of that manuscript. I am prepared to deny positively that it does occur.

Of course, the two solstices have not the great significance in Yucatan which, with their extreme alternations of light and temperature, they possess in the higher latitudes; yet by the alternations of dry and wet seasons, by the varying length of the days, which differ by two hours, and by the higher or lower position of the sun, as well as by the deviation in the point of the sun's rising and setting, they are sufficiently noticeable not to be passed over in silence in the ancient literature of a race so mathematically endowed as the Maya.

We know from the Maya manuscripts that four animals—deer, bird, lizard, and fish—were frequently placed in combination with the four cardinal points. To these must now be added, if my hypothesis be correct, the tortoise as the representative of the northwest and northeast and the snail as the representative of the southwest and southeast. In Codex Cortesianus, pages 31a and 32a, the four animals appear, and immediately after them (page 33a) the tortoise. On the so-called title page that has been much discussed, which connects the Troano codex with Codex Cortesianus, to the days from Imix to Kan, from Manik to Oc, and, lastly, Ben are assigned the four cardinal points, while Chicchan and Cimi, as well as Chuen and Eb, each have two unfamiliar signs, not the same both times, but different ones, making four signs in all. Can these be the intermediate points? Cimi, like death, would, as we have seen, be very appropriate to the snail, while the sign for Chicchan in Codex Troano-Cortesianus (not usually in the Dresden) has that latticework which, above, I have already connected with the tortoise. On the other hand, the relation of Chicchan to the serpent's skin can not be denied. Moreover, I am aware that the direction up and down is supposed to be indicated by those two signs introduced between the cardinal points, a theory which accords in so far with my hypothesis as these hieroglyphs denote the highest and the lowest position of the sun.

PAGE 24 OF THE DRESDEN MAYA MANUSCRIPT[a]

INTRODUCTION

The Dresden Maya manuscript has thus far been published three times, first by Lord Kingsborough in his Mexican Antiquities (volume 3) and twice, with different introductions, by me (Leipzig, 1880, and Dresden, 1892).

It consists, as I explained in my first edition, of two wholly distinct parts. The first, consisting of 48 pages, contains on one side pages 1 to 24 and on the other pages 25 to 45 and three blank pages; the second, consisting of 30 pages, contains on one side pages 46 to 60, on the other pages 61 to 74 and one blank page.

Page 24, the one to be here discussed, with which the front of the first part ends, is perhaps the most important in the entire manuscript, for one entire side of the second part (46 to 60) is merely a further exposition of the contents of page 24.

The only difference is that page 24 is confined to astronomic observations, while pages 46 to 60 bring the astronomic and the mythologic more into connection.

The astronomic problem on page 24 is to connect certain given periods of time by common multiples. These periods of time are as follow:

1. The sacred tonalamatl of 260 days, consisting of 20 weeks of 13 days each.
2. The old official solar year of 360 days, or eighteen periods of 20 days each.
3. The true solar year of 365 days.
4. The apparent revolution of Mercury of 115 days.
5. The apparent revolution of Venus of 584 days.
6. Possibly, the apparent revolution of Mars of 780 days.
7. The revolution of the moon of between 29 and 30 days, which in the calendar, however, was computed at but 28 days. Thirteen of these month periods of 28 days made up a year of 364 days.
8. Possibly, the very ancient period, which was also Aztec, of the 9 days or nights (señores de la noche).

Before we consider more closely in what manner and how far this page solves the problem mentioned above I will give a sort of copy of it:

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[a] Zur Entzifferung der Mayahandschriften, IV, Dresden, June 11, 1894.

1	17	29	151,840	113,880	75,920	37,960
2	18	30	I Ahau	I Ahau	I Ahau	I Ahau
3	19	31				
4	20	32	185,120	68,900	33,280	9,100
5	21	33	I Ahau	I Ahau	I Ahau	I Ahau
6	22	34				
7	23	35				
8	24	36	35,040	32,120	29,200	26,280
9	25	37	VI Ahau	XI Ahau	III Ahau	VIII Ahau
10	26	38				
11	27	39				
12	28	40				
13			23,360	20,440	17,520	14,600
14			XIII Ahau	V Ahau	X Ahau	II Ahau
15						
16						
(2200)	1,366,560	1,364,360	11,680	8,760	5,840	2,920
IV Ahau	I Ahau	I Ahau	VII Ahau	XII Ahau	IV Ahau	IX Ahau
8 Cumku	18 Kayab	18 Zip				

In connection with this I would make the following observations:

1. While the copy shows large vacant spaces, the original, like all the sheets of the manuscript, is wholly without vacant spaces, since the Maya numerals occupy far more room than the European.

2. The numerals 1 to 40 in the three left-hand columns represent forty different hieroglyphs. All the rest of the space is taken up with numbers, twenty-three day signs (always the same, Ahau) and three month signs (on the left below, Cumku, Kayab, Zip).

3. This page, like most of the pages of the manuscript, is imperfect at the top, only detached portions of the hieroglyphs 1 to 3, 17, and 29, as well as of the four topmost numbers (which I have restored by conjecture), being left. Were it not for this ever-recurring loss of important passages our knowledge of Maya would be far more advanced than it is.

4. I have ventured to correct two clerical errors in my transcription. In the first place, the date of the month 18 Zip, where the writer has set down 18 Uo, that is, the second instead of the third period, the characters for the two being very similar; secondly, the IX in IX Ahau in the lower right-hand corner, where the manuscript reads VIII, because a dot coincides with the red border below.

I shall first consider the numbers and the month and day signs appertaining to them, and I shall then try as far as possible to explain the forty hieroglyphs on the left. The author of the manuscript doubtless wrote these hieroglyphs in order to make the numbers more intelligible, while we, on the contrary, are compelled to penetrate the dark region of the hieroglyphs from the assured standpoint of the numbers.

The Numbers

To facilitate the comprehension of what follows, I give here the following table:

	115	260	360	365	584	780
2,920				8	5	
11,960	104	46				
14,040		54	39			18
18,980		73		52		
37,960		146		104	65	

The figures on the left denote five especially important periods of time; the upper row gives six of the periods mentioned in the foregoing section; the rest indicate the quotients resulting from the division of the former by the latter.

I will also call attention to the proportion:

11,960 : 37,960 : : 115 : : 23 : 73.

We begin by considering the four columns on the right and proceed from below upward and in each line from right to left.

We first encounter a progression of twelve terms, the first term being 2,920, the difference being also 2,920, and the last term therefore being 35,040=12×2,920. Now, 2,920 denotes eight times the solar year (8×365) or five times the Venus year (5×584).

These twelve figures are all accompanied by the days pertaining to them, between which there is naturally the same difference as between the numbers. But the period of 2,920 days is equal to 11 tonalamatl (11×260) and 60 days. Now, 60=4×13+8; the numbers preceding the day signs, indicating the position in the week of 13 days, must, therefore, be constantly set forward by eight.

Furthermore, 60=3×20; therefore, the same day will always appear in the series of 20 days after an interval of 2,920 days. And for this day, the most important one is chosen, the one most frequently used, the final point, and, as we may say, the apex of a series beginning with the day Imix, the day Ahau, which seems to be sacred to the sun god, the Kin-ich-ahau ("lord of the day's eye"), just as the same day in Kekchi and Cakchikel is named after the god Hunahpu.

The actual zero point from which all the series in the Maya manuscripts proceed is invariably suppressed or only becomes apparent at the very end of the series. The first thing that is recorded in these series is always the number which results after the expiration of the first period. To find the zero point here we must count backward from IX Ahau 60 days, which brings us to I Ahau, a day which is very important in relation to what follows. Here I must utter a warning against the error of supposing I Ahau to be the day with which Maya chronology begins. It seems rather to be merely an arbitrary term of equation, which must always undergo correction if it is to be referred to exact chronology. As Maya chronology begins with the day IV Ahau, the correction in our case should consist of +140 or —120. We shall, in fact, meet with these figures later.

But it is the purpose of these series to be continued until their terms and the differences of those terms agree with the tonalamatl of 260 days. This object it not attained in the first twelve terms. The series must, therefore, be continued, and this is done not in the next line (the second from the top), but in the topmost line, which we will therefore consider before the second.

This topmost row, as I have already observed, is in part destroyed. The numbers still legible are as follow:

1			
14	6	16	7?
0	0	0	0

I am glad to be able to state here for the first time that I have succeeded in completing this line in the simplest way. It must have appeared as follows, and I have added to it day dates:

1			
1	15	10	5
1	16	10	5
14	6	16	8
0	0	0	0
I Ahau	I Ahau	I Ahau	I Ahau

Written according to our method, the figures are 151,840, 113,880, 75,920, and 37,960: that is, one, two, three, and four times 37,960. But the latter number is also equal to 13×2,920; it therefore follows directly after 12×2,920, the last term in the series of twelve terms.

Since the four numbers are all divisible by 260, I Ahau belongs to them all; that is, the day which I assumed to be the zero point of the whole series. And it is quite in accord with the rest of the series occurring in the manuscript that the difference in the first twelve terms is 2,920, but in the continuation, as soon as the number divisible by 260 is attained, it is 13×2,920.

Besides 37,960, of which tonalamatl of 260 days, the solar year of 365 days, and the Venus year of 584 days are factors, the second number from the left, 113,880, which has been frequently discussed and is usually designated ahau katun, is especially noteworthy among these four numbers. It is also divisible by 780, the triple tonalamatl or the Mars year.

Of the four columns on the right, only the second line, thus far omitted, remains to be described. It contains the four numbers 185,120, 68,900, 33,280, and 9,100; to each of them the day I Ahau is added, since they are all divisible by 260. Only the smallest of these numbers, 9,100, really has anything remarkable about it, as it is divisible not only by the tonalamatl, but also by the year of 13 months, which has 364 days. These figures were for a long time a puzzle to me, since they do not form a series and have no legitimate relation to their neighbors. They produce somewhat the effect of a mere aid to computation, such as one jots down on a separate sheet in the course of some great mathematic task.

A light suddenly dawned upon me when I combined the first and third and second and fourth numbers by addition or subtraction. I thus obtained four results:

1. 185,120+33,280=218,400, which is just 600 13-month years of 364 days, 280 Mars years of 780 days, 840 tonalamatls, and 7,800 months of 28 days.

2. 185,120—33,280=151,840; that is, the largest number in the topmost line, as well as 416 solar years of 365 days, 52 periods of 2,920 days, and 260 Venus years of 584 days, or the product of the days of the tonalamatl and of the Venus year.

3. 68,900+9,100=78,000; that is, 100 Mars years or 300 tonalamatls.

4. 68,900—9,100=59,800; that is, 520 Mercury years of 115 days or 230 tonalamatls or five times the notable period of 11,960 days already mentioned. This can not be chance. The facts speak too plainly. But who can penetrate the intellectual workshop of the Indian author and trace his course of thought and mode of work?

The four columns at the right of the page having been thus disposed of, let us turn to the three on the left, and first to that part of them which is below the forty hieroglyphs.

I will here repeat this passage from the transcript of page 24 given above:

(2200)	1,366,560	1,364,360
IV Ahau	I Ahau	I Ahau
8 Cumku	18 Kayab	18 Zip

We will first dispose of the number 2,200. It is simply the difference between the two large numbers and, as is usual with differences, is provided with a red circle surrounding its lower figure (0).

Three calendric dates and two numbers now remain. The number belonging to the date on the right is missing, probably only for want of space, as often happens in this manuscript. I will supply it in parenthesis and write each date, adding the year of each, below the number belonging to it. We then have as follow:

1,366,560	1,364,360	(1,352,400)
IV Ahau	I Ahau	I Ahau
8 Cumku	18 Kayab	18 Zip
Year IX Ix[a]	III Kan	X Kan

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[a] According to the system of the Dresden codex now accepted these will be the years VIII Ben, II Akbal, and IX Akbal. C. T.

From the date on the right to the middle one there is an interval of 32 years and 280 days=32×365+280; that is, the remarkable number 11,960, already mentioned, in which the tonalamatl and the revolution of Mercury meet. From the middle date to that on the left there is an interval of 6×365+10=2,200 days, which is given in the manuscript.

Of these dates, which of course recur every 18,980 days, or 52 years, that on the right, corresponding to our September 11, hardly awakens any particular interest. The corresponding number is 5,201×260+140. This 140, however, as already indicated, is quite necessary, since these three numbers all proceed from the normal date IV Ahau, and between IV Ahau and I Ahau there are 140 days. Moreover, I would remark that 1,352,400 is 28×48,300 and also 115×11760, and is therefore divisible by 28, the month of the 364-day year, and by the revolution of Mercury.

The middle date is more important. The day 18 Kayab is our 18th of June. In my essay "Schildkröte und Schnecke in der Mayaliteratur" I tried to prove that it is likely that the sign for the period Kayab is a tortoise's head, that the tortoise was the symbol for the summer solstice, and that June 18 was probably regarded as the longest day. The number corresponding to this date is 115×11,864, and this is divisible by the revolution of Mercury. It has still another property, which I hardly venture to mention. It is 29.66×46,000; that is, 46,000 revolutions of the moon, each estimated at 29.66 days. On pages 51 to 58 of the manuscript the revolution of the moon seems to have been even more exactly specified, namely, at 29.526 days, as I have pointed out in Globus, volume 63, number 2. It may be objected that 46,000 is a surprisingly round number only to us and not to the Maya. But to this I reply that if we divide it by 115, the revolution of Mercury, we have 400, and 400 (20×20) in a vigesimal system is certainly a round number, which for that reason was sometimes denoted by a simple word, in the Maya (according to Stoll) by bák, in the Cakchikel (according to Seler) by huna. Our number 46,000 is therefore a huna of periods in which the times of revolution of the two celestial bodies that run their courses the quickest harmonize.

It should also be noted here that the middle one of the three great series on pages 46 to 50, amounting to 37,960 days each, also begins with the date I Ahau, 18 Kayab.

In the date on the left, with the number belonging to it, we see at last the true starting point of Maya chronology, not only for our manuscript, but for Maya literature in general. Thus I consider that the Cross of Palenque by the signs on A and B, 16, indicates precisely the date I Ahau, 18 Kayab; by those on D, 1, and C, 2, precisely the difference 2,200, 8 tonalamatls+6×20; and by D, 3, and

C, 4. precisely the date IV Ahau, 8 Cumku. This last date, answering to our 28th of June, may be regarded as the day of the greatest heat, or the day on which the sun ends its solstice. The corresponding number, 1,366,560, combines many properties. It is divisible by the period of the señores de la noche, or lords of the cycle, 9 times 151,840 being therefore nine times the number which we find at the apex of the great series; by the tonalamatl, 260×5,256; by old official years, 360×3,796; by solar years, 365×3,744; by Venus years, 584×2,340; by Mars years, 780×1,752; by solar Venus periods, 2,920×468; by the solar-year tonalamatl, 18,980×72; by twice the latter, the period so important in the series, 37,960×36; and by the periods before mentioned that are usually designated as ahau katuns, 113,880×12.

It should also be mentioned that the first number is removed from this third one by 14,160 days (equal to 11,960+2,200). Hence the difference between them is 14,040, mentioned above as a remarkable number, increased by the interval between I Ahau and IV Ahau, that is, 120, also mentioned above.

This number is the real objective point of our page. It lies, like almost all the large numbers in the manuscript (except those in the serpents), between one and one and a half millions. Did it represent to the writer of the manuscript the present, the past (history), or the future (prophecy)? Perhaps it may serve to elucidate the matter further if I remark that the monuments of Copan, described by Maudslay, the dates of which most probably refer to the present, all contain a number of greater magnitude and therefore point to a more recent period than the page under consideration. I here give a number of such dates:

Altar S	1,375,200	Stela I	1,383,760	Stela J	1,393,200
Altar K	1,402,768	Stela A	1,403,800	Stela B	1,404,000
Stela M	1,413,000	Stela N	1,414,800		

From this it follows that this degree of civilization, if it survived in Copan until the arrival of the Spaniards, probably produced no monument of such a character before the year 1400. If page 24 of the Dresden manuscript indicates the present by this important number, it was written 132 years before the latest monument of Copan, mentioned above, and 24 years before the oldest. But I think it is more probable that the date farthest to the right (I Ahau, 18 Zip, year 10 Kan) denotes the present, the other two alluding to remarkable days in the future. In that case, this page is 39 years older. The number indicating the present might then have been omitted as a matter of course and of little significance, while a reference to astronomic events of the future was of more importance. Of course, it is taken for granted that the initial point of the computation is the same for the monuments of Copan as in the Dresden manuscript.

The Glyphs

Here we enter a mysterious realm, where conjectures occupy a greater space than actual facts. One fact, however, is certain, and that is that these characters are to be read in the same order in which I have designated them by numbers. I shall therefore discuss them in that order.[a]

1 to 4. The first three signs are almost wholly destroyed, and this interferes in the highest degree with our comprehension of the whole. It would scarcely be possible to restore them unless a parallel text should be discovered. But this seems to be certain, that the Venus period is the chief subject treated of here as well as in the fundamental series already discussed. Sign 4, which I formerly regarded as the one belonging to the west, is clearly that of the east. We might, therefore, suppose that these four signs signify the four points of the compass in the same order in which they are set down five times in the middle of the left side of pages 46 to 50, which pertain to this subject, but the remains of sign 3 do not coincide with this theory.

5 to 9. Here we have the sign for Venus five times in succession, thus indicating the five Venus years, which underlie the series occurring on this page. Signs 6 and 8 seem to me now, as they did eight years ago, merely variants of 5, 7, and 9, but I confess that in the former I tried for a time to find the sign for Mercury. Both characters also occur side by side on pages 46 to 50, where there is no mention of Mercury, nine or ten times on each page.

10. This is a familiar form of the sign for Moan. I have recently tried to prove in Globus that Moan also stands for the Pleiades, with whose disappearance and reappearance the beginning of the year seems to be connected. Does sign 10, according to that, denote the solar year, with which our page combines the Venus year? Moreover, on page 50, where the 2,920-day period ends, we see the Venus and the Moan signs side by side on the right at the top.

11, 12. If the preceding signs refer to the Venus and solar years, we should expect to find the tonalamatl here as the third member of the combination. The two signs occurring here are a repetition of the same one, being the sign for the thirteenth period of 20 days (Mac), the close of which comes at the expiration of 260 days of the year. Does the repetition of the character really signify the recurring tonalamatl?

13=f. This is the sign kin, "sun", "day", with the usual affix, which might almost be taken for a sign of the plural. Above it is what is known as the rattlesnake sign, which seems to denote a union, a grouping together, by the help of which I thought, in my article

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[a] Owing to some confusion and uncertainty in the identifications fig. 106, which was intended to show the glyphs referred to, is omitted.

"Zur Maya-Chronologie" in the Zeitschrift für Ethnologie, that I had found a sign for the period of 18,980 (52×365) days. Are we then to regard this sign as twice that period; that is, 37,960 days, which we see is the objective point of the series on our page?

14 to 18. As the preceding characters led us to the Venus-sun period and to pages 46 to 50, connected with it, so with these five glyphs we come to the Mercury-moon period and pages 51 to 58, devoted to it, and, therefore, also to the large number in the third column of our page. Let us compare with our signs the ten glyphs found on the lower half of page 58, above the picture, which I will designate

a b
c d
e f
g h
i k

(By the way, I would like to consider a as the glyph of Mercury, e and f as signs for the solar and lunar year of 364 days; c and d might possibly signify 13×28. I will now try to explain characters b, g, h, i, k.)

We here reach the following results:

14=c, which is, as I have shown, the sign for 20 years of 360 days; that is, for 7,200 days.

15=g, a hand holding a square which is divided by a cross into four parts. I am inclined to conjecture that this is the period of 20 days. Before the sign 15 is the numeral 1, which occurs on page 58 before g, but with a small cross below it, which perhaps merely indicates that the 1 does not belong here, but with g, where there was no room for it. I therefore read the whole 1+20=21.

16=h, the sign of the fourteenth 20-day period (Kankin), above it is the familiar Ben-Ik sign, which I take to be the lunar month of 29, or, more precisely, 29.5 days (reckoned at only 28 in the calendar). Before it is a prefix which is more distinct on page 58, consisting of two lines and two small circles, which I am inclined to consider the character for duplication, 2×29.5=59. Yet I confess that I am still doubtful about this, especially as to the meaning of the character kankin. Was it chosen because 14 is the half of 28?

17=b. Although 17 is almost destroyed, I think there is no doubt about this equation, judging from the fragments which remain. Hence we have here 13×360=4,680 days, a third of the remarkable period of 14,040 days.

We have therefore,

14= 7,200 days
15= 21 days
16= 59 days
17= 4,680 days

11,960 days

that is, precisely the Mercury-moon period; the last number on page 58 was only 11,958, and therefore referred merely to the first of the three days set down near it.

18=k, in both instances forming the termination of the group, and actually denoting termination or end, in which sense we often find this sign, for instance, eight times in succession at the termination of the great periods on pages 61 and 62. It is also the sign for the sixth period of 20 days, Xul, and it has long been known that xul means the end. Another word, xul, or shul, means the flute, and the character may easily have originally signified the head of a flute-player.

Perhaps it will lead to a better comprehension if we compare the very similar group on page 53 at the top.

19, 20. Here are two characters which indicate that a detailed treatment of the parts into which each Venus year is divided is now to follow; that is, the 236, 90, 250, and 8 days, as I have already proved in 1886, in my Erläuterungen. For the first of these signs is Venus itself; the second, a hand holding an obsidian knife (as indicative of cutting, of dividing). On pages 46 to 50, where this dividing is represented, we see on the left in the middle an entire line filled with these hands, four on each of the five pages.

21 to 25. These five characters all refer to only one of the four parts of the Venus year, to the period of 236 days (of the morning star), no such amount of space being reserved for the other three. But these 236 days are under the domination of the east, this cardinal point always accompanying them (in the center of pages 46 to 50, above; in the lower third, below). The signs of the periods, as well as those of the cardinal point from the middle third of these five pages, continually move forward one point above, denoting the beginning and below the end of the 236 days. The sign (Chuen or Akbal?) constantly repeated in the lower third must likewise have some connection with this circumstance.

If we now turn back to our page 24, we find the signs 21, 22, 23, 24, and 25, on pages 47, 48, 49, and 50, and on page 46 in the fourth line of the middle third, while on pages 48, 49, 50, 46, and 47, they are in the first line of the lower third. It would be venturesome to try to explain the characters in detail. They are deities without doubt. As seems to me most probable, 21=N, 22=F, 23=H, 24=B, 25=A, to follow the designations of Schellhas in the Berlin Zeitschrift für Ethnologie; but that is merely a very modest conjecture. Before 21, which corresponds to the eleventh 20-day period, Zac, we see a 4, and this may indicate that this Venus year should begin the 8-day inferior conjunction with the day 4 Zac after. Pages 49 and 50 have a 1 before 23, which seems to be obliterated on page 24. In the singularly composite character on page 48, first glyph on the right side of the center line of the middle, I am inclined to surmise a combination of the glyphs of those five gods.

26 to 28. The sign 26 signifies the day Caban, by which sign also the ground and generally the direction downward is often indicated. As in this passage we often see Caban closely combined with glyph 27, as on pages 32b to 35b, on page 48 in the middle of the right half, also on page 73 in each of the three divisions, also on pages 38b, 39b, 40a, 55a, 56a, 66a, 71a, 71b, sometimes probably denoting agriculture. Can 27 be the sign Muluc belonging to the north? That would agree very well with the direction downward. Then follows 28, the familiar sign Chuen, which we have already seen repeated so many times on pages 46 to 50. It has a prefix, the upper part of which is an ahau, the lower part of a god's face, probably that of the god D, who is usually combined with Ahau; but D, as Schellhas has already assumed, seems to be a god of the night. Therefore, although there is still great uncertainty regarding this point, I feel strongly inclined to believe there is a reference here to the long period of 90 days in which Venus is invisible during the time of superior conjunction, that is, it vanishes in night; hence it is dominated by the north. With regard to the composite sign 28 I would suggest a parallel with A and B, 8, on the Cross of Palenque (*a*, figure 107).

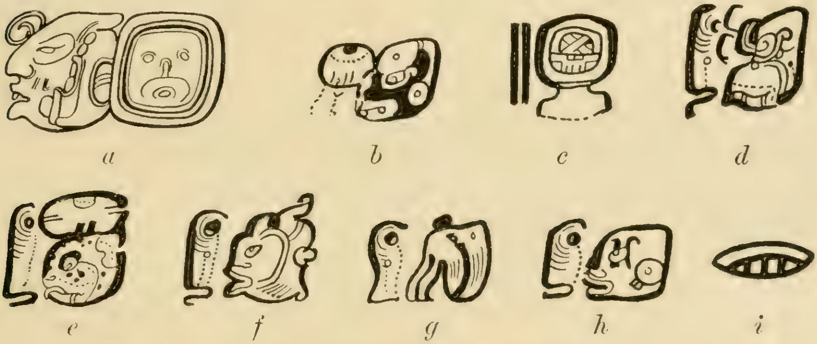

FIG. 107. Glyphs from the Maya codices.

29 to 31. These characters occur close to the end of the great series. They seem to me to denote nothing else than the result of that series; to be sure, 29 is wholly, and 30 almost wholly, obliterated; but I am sure from what remains of 30 that the normal date IV Ahau 8 Cumku stood here, as it does in the left-hand lower corner of our page. In 31, as in 18, we see the sign for Xul, "end", here denoting the end of the great period, which marks the close of the entire computation.

32, 33 (*b*, figure 107). The black deity, L, according to Schellhas, and with it the glyph of Venus, with the sign above it which we have already recognized as the sign for division. Thus we also find these two characters together on page 46 on the right in the middle, where the four Venus periods are probably set down in close succession; and that 32 and 33 (*b*) are really meant to denote the periods of 250 days belonging to the west is confirmed by the fact that the black divinity on page 50, on the left, actually appears among the deities who govern the separate parts of the Venus year—in the middle of the page at the beginning and at the bottom at the end of a period of 250 days. For prefix the black deity has here the sign Imix with three rows of dots proceeding from it. Since with the Mayas Imix very commonly stands at the beginning of the 20-day period, as the corresponding Cipactli always does with the Aztecs, the whole glyph might be read: Here begins the 250-day Venus period.

34, 35 (*c*). Exactly in the same place in which are the signs 32 (*b*) and 33 on page 46 we find the signs 34 and 35 (*c*) on page 47. 35 is Venus again, and 34 has the numeral 10 (on page 47 it may possibly be 11) before it, and 34, too, seems to signify a deity, possibly R (Moan), although in that case we should expect to find a 13 before it. On page 47, on the left, Moan represents a period of 8 days belonging to the south, the inferior conjunction of Venus.

If my conjectures are well founded, we have in 21 to 25 the eastern, in 26 to 28 the northern, in 32 and 33 (*b*, figure 107) the western, and in 34 and 35 (*c*) the southern part of the revolution of Venus (236, 90, 250, and 8 days, respectively), the last three being more briefly treated than the first owing to lack of space.

But I return once more to sign 34, Moan. The striking number 10 before it suggests the possibility that something else, probably a date, was to be designated. Now, the principal part of the sign is like that of the third 20-day period, Zip. It may, therefore, mean 10 Zip. We now remember that the signs for the eastern part begin with the date 4 Zac. But from 4 Zac to 10 Zip of the next year we have precisely the interval of 236+90+250=576 days, that is, a Venus year lacking only the 8 days of invisibility during inferior conjunction; according to our calendar, the interval between February 4 and September 3 of the succeeding year, the time from the appearance of the morning star to the disappearance of the evening star. May the future determine the year in question here. On pages 46 to 50, as I shall directly observe, other years are treated of.

36 to 40 (*d*, *e*, *f*, *g*, and *h*, figure 107). These, the last five signs, occur in exactly this order on pages 46 to 50, one on each page at the beginning of the third line in the middle group of the right half, directly under the signs which we have just mentioned; but with this difference, that on page 24 they always have the same prefix, which they lack on pages 46 to 50, while there the same glyph invariably follows them. On page 46 the sign 36 (*d*, figure 107) has no further

addition; the signs 37 to 40 (*e*, *f*, *g*, and *h*), on pages 47 to 50, on the contrary, have various appendixes, which can not be discussed here. 36 to 40 (*d*, *e*, *f*, *g*, and *h*) no doubt likewise denote divinities—36 (*d*) possibly K; 38 (*f*) probably E. A whole Venus year of 584 days must belong to them, as signs *e*, *f*, figure 103, and *a*, *b*, *c*, figure 104, indicated at the beginning of these glyphs.

If, finally, we consider these glyphs as a whole, omitting 1 to 4 on account of their obliteration and 29 to 31 (*a*, figure 107), which only repeats the normal date, we find that the Indian writer desires to say this:

> I am here treating especially the periods consisting of five successive Venus years, bringing them into harmony with the solar year and the tonalamatl. I am at the same time considering a second important period, that in which the two heavenly bodies of the second class, the moon and Mercury, come together in their orbits, a period made up of four unequal parts. Just in the same way is each individual Venus year divided into four unequal parts, which appertain to the east, north, west, and south and are ruled by certain deities, which I can mention only in part, owing to lack of space. Lastly, I would add that each of the five Venus years of a period is dominated as a whole by a deity, and the signs of these I give here.

Thus far, for the present, am I able to explain page 24. Many riddles still remain unsolved, but if one compares what I was able to say in 1886 in my Erläuterungen, pages 47 and 48, in regard to this page, he must agree that the advance in knowledge in these eight years has not been small. It is only nine years since the sign for zero was discovered, without which no number above 19 could be read.

PAGES 71 TO 73 AND 51 TO 58, DRESDEN CODEX[a]

Pages 71 to 73 of the Dresden Maya manuscript in the middle and lower third have each three horizontal rows of hieroglyphs so placed that three always align vertically. These hieroglyphs have no connection with the numbers below them, which are continued toward the left and belong to a series with the difference 65, of which I have already spoken in the second paper of this series. The hieroglyphs and numbers can have no connection with each other because the numbers are to be read from right to left, the written characters from left to right. This is proved by the fact that in at least eight instances we find above the hieroglyphs a character in which we recognize a hand pointing to the right, similar to a hand which occurs twenty times in succession on pages 46 to 50 of the manuscript.

But, misled by the direction of the rows of numbers, the writer began the hieroglyphs on page 71 at the right instead of at the left, but corrected his mistake after the first four characters. Accordingly, I read the groups of three hieroglyphs each in the following order:

Page 71	Page 72	Page 73
2 1	5 6 7 8 9 10 11	19 20 21 22 23
4 3	12 13 14 15 16 17 18	24 25 26 27 28

There are, therefore, 28 groups, or 84 separate hieroglyphs, fortunately in an excellent state of preservation, excepting slight injuries to groups 19 and 24. It will greatly aid the comprehension of what follows if the reader will write these figures on the edge of the separate pages in his copy of the manuscript as well as on that of the passage to be discussed later. The number 28, I am very sure, indicates the purport of this passage. We have unquestionably to deal here with the year of 364 days, of which I treated in my article on "Die Zeitperioden der Mayas" in Globus, volume 63, and which consists of 13 revolutions of the moon of 28 days each, or of 28 weeks of 13 days each; each of the 28 groups, therefore, doubtless signifies a period of 13 days.

But the year of 364 days is divided into four periods of 7×13=91 days each. The series in our manuscript, pages 31 to 32 and 63 to 64, are based upon such periods, and in close proximity to our passage, on pages 65 to 69, we find four similar periods, each divided into various unequal parts, as I have proved in the treatise "Zur Maya-Chronologie" in the Zeitschrift für Ethnologie, volume 23, page 144.

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[a] Zur Entzifferung der Mayahandschriften, V, Dresden, July 1, 1895.

It now appears that in the passage before us the 364 days are also divided into four parts of 91 days each; for groups 4, 11, 18, and 25 have each the same hieroglyphs, and the interval between 4 and 11, between 11 and 18, between 18 and 25, and between 25 and 4 is always equal to 7×13—that is, 91, except that we find a 4 prefixed in group 4*b* (I will designate the three hieroglyphs of each group from top to bottom as *a*, *b*, *c*). This number I will try to explain later.

We come to the important question whether we are to recognize the beginning of that year in this passage. It should be observed here that Spanish authors give us widely differing dates for the beginning of the Central American year, part of them relating to very late times, and hence of little value in examining ancient native literature. The date of these statements and the region to which they refer should be critically examined. It must be borne in mind, however, that different beginnings of the year may have been in use at the same time and in the same region, just as with us the civil year begins with the 1st of January, the ecclesiastic year with the first Sunday in Advent, the school year usually at Easter, and the fiscal year at various other times.

According to the statement of Diego de Landa, which dates from a period long preceding the end of the sixteenth century, July 16 was accepted as the beginning of the Maya year. No doubt their civil year began then.

I have tried, on the other hand, to show in Globus, number 15, volume 65 (1894), that according to the accounts given by Peter Martyr, dating from the beginning of the sixteenth century and referring, it is true, only to Mexico, the Maya, like the Chiapanecs in Chiapas, had a year preceded by one which closed in May during the conjunction of the sun with the Pleiades, one which began with the conjunction of the sun and Orion's belt. I do not believe that these peoples regarded the whole of what we call Orion as a constellation, but only the three bright stars in the belt, the most striking feature of the celestial equator. The name mehen ek ("the sons") points to this, and this, too, may be the solution of the three dots under the hieroglyph for "year". Thus we have here an astronomic year.

Mrs Zelia Nuttall, whose labors in the Aztec field have been so successful, presented a "Note on the Ancient Mexican Calendar System" to the Congress of Americanists at Stockholm in 1894 in which she ingeniously points out a year which began with the spring equinox and included in its middle the sacred tonalamatl; that is, 260 days preceded by 52 days and followed by the same number. As the real nucleus of the year in question is this ritual period, we may fitly call it the ritual year.

It is this ritual year which I recognize in the present passage of the Dresden codex as belonging to the Maya region. It should therefore begin about the 10th of March, acocrding to the Julian calendar, which was about the time of the spring equinox.

Proceeding from this point of time I will now try to tabulate the chronology of this passage. In the first column I shall place the numbers which designate the groups of hieroglyphs in question: in the second I shall specify to which day dates of that year the separate groups refer; in the third, on which day of our year they fall: lastly, in the fourth, the 20-day period with which each particular one mainly coincides:

1	1 to 13	10 to 22 March	Ceh
2	14 to 26	23 March to 4 April	Mac
3	27 to 39	5 to 17 April	Kankin
4	40 to 52	18 to 30 April	
5	53 to 65	1 to 13 May	Moan
6	66 to 78	14 to 26 May	Pax
7	79 to 91	27 May to 8 June	Kayab
8	92 to 104	9 to 21 June	
9	105 to 117	22 June to 4 July	Cumku
10	118 to 130	5 to 17 July	
11	131 to 143	18 to 30 July	Pop
12	144 to 156	31 July to 12 Aug.	Uo
13	157 to 169	13 to 25 Aug.	
14	170 to 182	26 Aug. to 7 Sept.	Zip
15	183 to 195	8 to 20 Sept.	Zotz
16	196 to 208	21 Sept. to 3 Oct.	
17	209 to 221	4 to 16 Oct.	Tzec
18	222 to 234	17 to 29 Oct.	Xul
19	235 to 247	30 Oct. to 11 Nov.	
20	248 to 260	12 to 24 Nov.	Yaxkin
21	261 to 273	25 Nov. to 7 Dec.	Mol
22	274 to 286	8 to 20 Dec.	
23	287 to 299	21 Dec. to 2 Jan.	Chen
24	300 to 312	3 to 15 Jan.	
25	313 to 325	16 to 28 Jan.	Yax
26	326 to 338	29 Jan. to 10 Feb.	Zac
27	339 to 351	11 to 23 Feb.	
28	352 to 364	24 Feb. to 8 March	Ceh

While calling attention in what follows to certain points which justify this arrangement, I regret that a large number of glyphs must be omitted because an explanation of them is impossible. This is doubly to be regretted in the case of characters that frequently occur in Maya manuscripts, which, if definitely known, would throw much light upon many passages.

Among these is the universally known, much discussed, but never clearly understood, Kan-Imix sign (*a*, figure 108), 7*c*, 10*c*, 27*c*, in our passage; secondly, the Kin-Akbal sign (*b*), here 1*b*, 3*a*, 5*b*, 21*b*, 28*a*, to which we would like to attribute the meaning of an initial day, if that meaning were applicable in every case. Further, the glyph (*c*) occurring in 9*c*, 13*b*, 14*c*, 19*c*, 26*c*, which, although it seems to be connected with the conception of a death bird (owl), is still very far from being clearly and suitably explained in every instance. The same may be said of the Caban sign, which is doubtless often used to indicate the idea of earth, here 2*a*, 3*c*, 24*b*, 28*c*, and of the other sign, found in 1*c*, 3*c*, 21*c*, 22*b*, 24*c*, so often combined with it, as I have already stated in my article regarding page 24 of the manuscript. A final and authoritative solution is the more to be desired because all these signs recur without the least regularity.

In certain of these glyphs (as in the sign 25*c*, occurring only once here, but continually found elsewhere), and doubtless also in others, there may be an allusion to some special feast, some particular ceremony, some sort of sacrificial offering, or even to the rank of some individual; but of all this nothing certain is known at present.

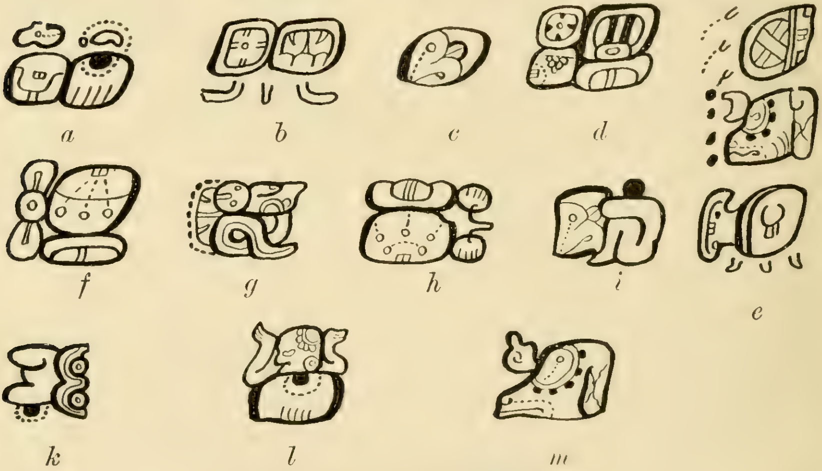

FIG. 108. Glyphs from the Dresden codex.

It is delightful, by way of contrast, to see this pervasive darkness occasionally illuminated by a full or even by a dawning ray of light. Group 1 is a case in point. For the glyph 1*a* (*d*, figure 108) can be explained at the outset. It consists of four parts: On the upper left side, the sign kin, "sun", "day"; on the upper right side, the sign for the year; on the lower right side, the knife, or symbol of division or of section; on the lower left side, what is particularly decisive, the month Ceh. I therefore read 1*a*: The day of the new year in the month Ceh. Sign 1*b* is the Kin-Akbal sign (*b*), which is either the initial day or the day Akbal. The latter would signify a Kan year, for which I hardly see a reason.

Further, the four similar groups, 4, 11, 18, and 25 (*e*), are of special importance. The cross in the upper glyph may here be a compass, although it may have another meaning elsewhere. I regard the middle glyph as a Bacab, or a deity of the wind and the cardinal points, and the lower glyph as ik, " wind ". We have long known that each group of 91 days is under the rule of a special Bacab.

The most important events of the year are clearly the sowing of the maize and the maize harvest, as well as the beginning and the end of the rainy season. Now, we find the first two in the maize deity, E (according to Schellhas), who appears in 6*c* and 13*c*, which are 91 days apart and denote the end of May and the beginning of August, which perhaps applies to a higher region, since in the plains but 60 days were reckoned between seed time and harvest. The other signs of the two groups, familiar as they are, I must leave unexplained.

I am inclined to recognize the beginning and end of the rainy season in signs 8*c* and 16*c* (*f*), where what I consider three rays of drops fall from a square signifying the heavens (as usual), like the rain falling from the clouds represented on page 36 below (second picture). The serpent, 8*b* (*g*), as the symbol of water, may also be an allusion to this, as it is often combined with Akbal (which often stands for " beginning "). The duration would be 104 days, from June to September. But I ought to remark that the sign in which I seek a suggestion of the rainy season is very like another, common to both the Dresden and Troano codices, which is very closely connected with the idea of the week of 13 days (*h*).

Some other views I desire to put forth as mere conjectures.

If the sign Chuen, 7*a*, is really a serpent's jaw it might refer to the beginning of the astronomic year in May, as the serpent very often denotes time. In 9*b* (*i*) there is a crouching human figure beside the sign which, as I have mentioned above, is regarded as that of the death bird. In another place (Zur Entzifferung der Mayahandschriften, IV) I have regarded a human figure standing on its head (*k*) on page 58 as a sign for the planet Mercury, and I would add here that I am inclined to consider the crouching captive on page 60 as Mercury subdued by Venus. In 9*b*, which belongs to the period from the one hundred and fifth to the one hundred and seventeenth days of the year, a 115 days' revolution of Mercury is completed. I consider page 53, at the top, as a parallel to this passage, where the Venus sign occurs quite unexpectedly in the period in which, if the numbers and glyphs have reference to each other, the five hundred and second to the six hundred and seventy-fourth days elapse, in which, therefore, a Venus revolution of 584 days is completed. A crouching figure, as in 9*b*, also occurs on page 65a in the second series of 91 days, after 11+13=24 days of this series have expired; that is, directly after the 115 days of the apparent revolution of Mercury.

In 10*b*, and only in this passage, appears the glyph of the chief god of our manuscript, B. This coincides with the time of the sun's greatest power and of the civil new year, July 16. In group 12 *a* and *c* represent the year and *b* the head with the Akbal eye. Is this the beginning of the civil year? This should really form group 11, but there was no room for it, as the signs for the period of 91 days had of necessity to stand there.

Signs 14*a* and 15*c* are almost alike and remind us of 1*a*. Are they meant to express the middle of the ritual year, the time of the autumnal equinox, September 10? In 15*a* two hooks diverge from a sun sign. Are these the two halves of the year and is the numeral 3 preceding them the third quarter of the year?

In 20*b* we have the sign for the death god, A, which probably does not occur by chance where the month Xul comes to a close, which signifies the end.

In 23*a* we have the glyph of a black bird; two hooks pointing up and down proceed from it; below is the sign for the year. Is this the time of the shortest day, when darkness prevails?

This is all that I can say at present with regard to this calendar; some points are decided, others are still doubtful.

I find nothing in Codices Troano-Cortesianus and Peresianus which corresponds to this passage. On the other hand, several Central American calendars have been handed down to us from Spanish times. For instance, that of Pio Perez from northern Yucatan, which may be found in Stephens's Travels in Yucatan, in the Registro Yucateco, and in Brasseur's edition of Diego de Landa. In Brinton's Native Calendar of Central America and Mexico (1893), page 48, there are also two Chiapanec calendars from Chiapas. These calendars append a few ritual, astronomic, meteorologic, and economic notes to every period of 20 days. We might believe that these and other similar calendars that probably exist were translated directly from such ancient calendars as the one which is presented to us in the passage just now under discussion, only with the old pagan weeks of 13 days reduced to periods of 20 days. The passage from the Dresden codex discussed here, when once it can be fully translated, will very much resemble these more modern calendars.

We have here been concerned with a year of 364 days, the middle of which consists of the sacred period of 260 days, while at the beginning and at the end there are 52 days more, 104 together. Is it not wonderful, then, that in close proximity, on page 70, on the left, above and below, we find the two large numbers 1,394,120 and

1,201,200, both of which are exactly divisible by 364, 260, and 104, and therefore also by their common multiple, 3,640.

The Dresden manuscript has another remarkable parallel to this passage, which I shall now proceed to discuss. On pages 51 to 58 there is an extremely complex series of numbers, which I have already discussed elsewhere and may possibly treat later in still greater detail. It is interrupted by ten pictures, to each of which belong eight or ten glyphs, placed above them. This series begins on page 53, at the top, and proceeds first in thirty terms to the top of page 58; it then continues on page 51, at the bottom, and goes on in thirty-nine more terms to page 58. Now, as on pages 71 to 73 the twenty-eight terms are accompanied each by three signs, placed above them, so here we have two signs above each of the sixty-nine terms. There, as here, the numbers certainly have no connection with the glyphs, especially as the series of numbers forms a clear and perfect whole, and I now wish to show the probable interconnection of the glyphs, which is wholly different from that of the numbers, as far as that can be done, a great many on the upper part of the leaf being destroyed.

First, I will show the positions of the sixty-nine groups of glyphs in the manuscript, for the sake of greater clearness:

Page 51	Page 52
31 32 33 34 35 36	37 38 39 40
Page 53	Page 54
1 2 3 4 5 6	7 8 9 10 11 12 13
41 42 43 44 45	46 47 48 49 50
Page 55	Page 56
14 15 16 17 18	19 20 21 22
51 52 53 54 55 56 57 58	59 60 61 62
Page 57	Page 58
23 24 25 26	27 28 29 30
63 64 65 66 67	68 69

In glancing over this entire series of glyphs we observe that group 59 is missing. In place of it we find a snaillike sign, to which I ascribe the meaning of zero, as on page 64 a very similar sign certainly has this significance. This negation seems to me to mean that something in the previous passage was written by mistake in a wrong place. I would suggest that groups 54 to 59 should be arranged thus: 55, 54, 57, 56, 59, so that, not 59, but 58 is the one actually missing, and I hope to make this appear in some degree probable in what follows.

Here, as in the passage previously treated, I shall designate the upper glyph of each group as *a*, the lower one as *b*.

The hypothesis advanced by me is as follows: These sixty-nine groups of glyphs refer directly, like those in the passage previously treated, to a year of 364 days, which is divided into four quarters dedicated to individual Bacabs, each comprising 7 weeks of 13 days each. But we are not dealing here with a single year; but, in proportion to the space occupied by the groups, with a period of 13×69=897 days; that is, with two such years and 13 weeks. Let us try to prove this.

First of all, in group 37*a* appears a human figure stretching both arms upward (*l*); this is repeated in group 65*a;* that is to say, twenty-eight places farther on, so that just one year (13×28=364) lies between them. We see the same human figure, more complete, with its glyph, on page 36*b;* a bird issues from its head, holding a fish in its beak. The preceding year should begin in group 9*a*, but the glyph there is nearly destroyed.

But now in that year, between groups 37 to 65, I can also point out the four Bacabs, which, however, as in the passage on pages 71 to 73, do not coincide with the beginning and end of the year. For the signs 39, 46, 53, 60 (*b* in every case), show the Bacab sign previously found (*m*), in the last three identical, in the first at least similar, always after an interval of 7 weeks. We should expect to find the same sign in the preceding year in groups 4, 11, 18, 25, and 32, but I can not point it out there, although I will add that 25*a* shows at least the glyph which was combined with the Bacab sign on page 71.

If we look at the groups which immediately precede these Bacab groups, we see in 38, 52, and 58 (which, according to what has been said above, should really be 59), in the lower part heads like those of birds, resembling the Bacab sign, which all resemble each other. A similar head might be expected in group 45, but instead we find a Moan head, which is likewise a bird's head. Thus we again see intervals of 7 weeks between each.

In all of the eight groups mentioned, 38 and 39, 45 and 46, 52 and 53, 59 (nominally 58, as before mentioned) and 60, we always find the glyph Imix as the first, or at least a part of the first, sign, which is another confirmation of their general connection.

But these are not the only instances of a repetition after seven groups. In 42*a* and 49*b* we see the same sun sign represented between light and darkness. In 17 and 24 the same head occurs as the lower sign; also, it is true, in 15, 29, 40, 44, but here, too, 15 and 29 agree after an interval of 2×7 groups. Groups 15*a* and 36*a* agree after 3×7=21 groups; after a similar interval 10*a* and 31*a* show the same crouching person; but so, also, do 20*a* and 30*a*.

If, according to my proposition, 55 and 54 are transposed, then the two signs of 33 and 34 will exactly correspond to these after 3×7=21 weeks; so, too, will 35 and 56 agree, if, as I have also proposed, 56 is put in the place of 57.

Nor is it accidental that the serpent signs in 8*b* and 43*a* resemble each other, although 35=5×7 weeks have passed.

The perfect agreement between 41 and 47, after only 6 weeks have elapsed, might indicate that an exchange had taken place between two neighboring groups in one of the two passages. In 41*b* and 69*a* the same head at least occurs; that is, after a space of twenty-eight groups, or a year, as in 37 and 65.

Perhaps the most important thing thus far stated is the probable discovery of the sign for a Bacab repeated eight times. It is further confirmed by a ninth instance, on page 72, at the top, in the second group from the right, but the glyphs set down there belong to a series of numbers below them, the difference of whose separate terms is 54. In the third member of this series, page 72, at the left above, that is, above the number 162, the lowest glyph is associated with the character for the month Ceh in exactly the same way as group 1 in the passage first discussed, but the Bacab sign, which I have just mentioned, is associated with the eighth term; that is, with the number 432. Two hundred and seventy days have therefore passed since the Ceh group, and in this time, exactly after 273 days, the rule of a new Bacab begins.

It is remarkable that the numeral 4 accompanies this newly discovered Bacab sign, just as it does in group 4 of page 71, in the passage first discussed. To my mind this numeral 4 can only be an expletive affirmation that one of the four Bacabs is actually dealt with.

Perhaps it may yet lead to further discoveries if I observe that in both of the passages discussed in detail, pages 51 to 58 and 71 to 73 (I can count at least fourteen instances, in spite of the partial

PAGES 31A TO 32A, DRESDEN CODEX[a]

As it seems that the mathematic solution of the Dresden codex, which I undertook with imperfect success eleven years ago, has been wholly left to me, I will here more closely consider the especially important passage that almost covers the upper third of pages 31 and 32. This passage must have seemed to the writer of the manuscript to have particular importance; otherwise he would not have repeated three large numbers and three differences which occur there, on pages 62 and 63, where they are mixed with many other things. This repetition affords us the welcome opportunity of correcting two clerical errors in the third large number and in the third difference which occur on page 31. I will make these corrections at once, in order not to interrupt the exposition later.

The writer set down the third large number with the numbers 10, 13, 3, 13, 2; but it should read 10, 13, 13, 3, 2; or, interpreted in European numerals, 1,538,342.

The third difference, standing directly under this number, he wrote with 7, 2, then a black 14, and next a red 5. This was due to lack of space; it should be 7, 2, 14, 19=51,419.

Without these two corrections the surprising results which I am about to communicate would be impossible.

Investigation should begin at the right, which is the rule in all passages relating to arithmetic series.

On page 32, on the right, we see the glyphs of all the 20 days, in the following order:

4	13	2	11
8	17	6	15
12	1	10	19
16	5	14	3
20	9	18	7

Above each of the four columns there is a XIII in red, which means that each of the 20 days is to be considered as a thirteenth week day. The 20 days, however, form a regular series only when, beginning at the top on the right with the eleventh day, we pass to the fourth day, and then proceed in the same way in the following rows, ending with the twentieth day on the left below. Now, it appears that there are 91 days between day XIII 11 and day XIII 2, and the same is true of all the succeeding members of the series. The real zero point, which is always concealed in this manuscript, is XIII 20, the same as the last day of the series. This day is, however, the new year's day which recurs every 52 years, followed by I 1 as the second day, which gives the name to the whole year, for, according to the Maya view, the new year's day is not the first, but the zero day. It is not counted. Day XIII 20 is, therefore, highly significant in this passage.

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[a] Dresden, March 26, 1897.

The difference 91 is equally significant. It is a Bacab period, a quarter of the ritual year of 364 days. This entire list of 20 days, therefore, includes a period of 20×91=1,820, or 7 tonalamatls.

The rest of the upper third of page 32 and the column on the right of page 31 are filled by a series which begins with 91, and 91 or a multiple of this number always appears as the difference. This shows an attempt to obtain numbers divisible by the tonalamatl, 260. This attempt is uniformly adhered to in all these series. At the same time a number divisible by 104 is sought, 104 being the remainder of a ritual year of 364 days when a tonalamatl, 260, is subtracted from it. This division of the year into 260+104 recalls the hypothesis of Mrs Zelia Nuttall, which assumes that the Aztec year was separated into 52+260+52.[a]

It is unnecessary to repeat the entire twenty terms of the series in the manuscript, some of which are destroyed, since it concerns merely an auxiliary calculation. It is sufficient to give the principle. Here the two numbers 728 and 3,640 on page 32, on the left, need a passing allusion. They are of special importance, since with the former the combination of 91 and 104 is obtained and with the latter, besides this, the agreement with 260. It is as follows:

728=8×91 (therefore also 2×364)=7×104.
3,640=40×91 (therefore also 10×364)=35×104=14×260.

Our chief concern now is to represent what has thus far been stated as the germ of what is to follow.

The writer has added two superfluous signs at the end of the five columns of page 31 which belong here, in order to avoid an empty space. In the fourth and fifth columns he twice sets down the day XIII 20, the importance of which is already sufficiently conspicuous. In the first three columns he sets down the day IV 17 three times, and, besides, on the first and second he has twice set down the sign of the eighteenth month, Cumku. But we know that only the beginning of Maya chronology, upon which all numbers are based, is here meant, for it fell on the eighth day of the eighteenth month and was a day IV 17 in the year 9 Ix.

Before we consider the three large numbers with which the three first columns begin I must make a more general observation. The manuscript recognizes a multitude of numbers which increase from 1,200,000 to about 1,600,000. A part of these are actually expressed in the manuscript, and another part, as we shall see presently, are to be found by calculation. Now, all these numbers fall into two distinct divisions. The lesser range from 1,201,200 to 1,278,420. They therefore extend over 297 tonalamatls, or 211 years. The larger, on the other hand, begin at 1,366,560 and end with 1,567,332, thus extending over a period of 773 tonalamatls, or 550 years. There is a blank space between, which can not be due to accident, for it comprises 339 tonalamatls, or 242 years. Fifteen lesser numbers precede this gap and twenty-four greater numbers follow. It may be surmised that this gap is the present, that the lesser numbers are the past, and the larger numbers the future for purposes of prophecy. The stelæ at Copan, which I have mentioned (Zur Entzifferung der Mayahandschriften, IV), extend from the date 1,375,200 to 1,414,800; that is, through 152 tonalamatls, or 109 years. They signify the present, and must, therefore, provided the zero point of chronologic computation is the same, be more recent than the Dresden codex, in which the future begins about where the present begins in Copan.

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[a] Note on the Ancient Mexican Calendar System, Stockholm, 1894.

Above each of the three large numbers there was a date composed of a number and a glyph, but with the exception of insignificant remnants these dates are destroyed. Therefore, I can only regard it as a bare possibility that they denote the sixteenth day in the first month, the eleventh in the seventh, and the first in the fourteenth, which positions belong to the three days XIII 20 to be calculated afterwards.

The three large numbers are as follow:

1. 1,272,544. This is a day IV 1, the seventeenth day of the seventh month in a year 12 Muluc. The number is divisible by 91 and 104 : 13,984×91=12,236×104. Of the three factors sought, 260 is the only one not found here.

2. 1,268,540. This is day IV 17, the actual starting point of chronology, and this time it is the eighth day of the eighth month in the year 1 Ix. The number is divisible by 260, which is always the case with day IV 17; that is, it is 4,879×260. But it is also divisible by 17; that is, it is 74,620×17. This, too, is not accidental, for the interval between XIII 20 and IV 17 is 17, and we often find that two day numbers placed in close proximity with each other are divisible by their difference.

3. 1,538,342. This is a day IV 19, the fifteenth day of the eleventh month in the year 12 Muluc. Thus the year has the same designation as that of the first number, but it is 14 katuns (14×18,980) in advance of the former, and the day in it is 78 days in advance, for 78 days is the interval between IV 1 and IV 19; but the interval

is the same from IV 19 to IV 17, so that there is the same interval between the three days in the three numbers. The third number is neither divisible by 91, 104, nor 260, and yet this is the very number from which the number sought is to be obtained. However, like the other two, it is at least divisible by 13, the number of week days.

Among the three large numbers the manuscript shows the now familiar sign XIII 20. This means that those three numbers are all to be reduced to the day XIII 20 by means of subtraction. Now, the distance from XIII 20 to IV 1 is 121; from XIII 20 to IV 17, 17; from XIII 20 to IV 19, 199. The first two of these numbers are directly subtracted, but the third, as is often done, is first increased by a multiple of 260, which produces no alteration in the position of the days. Here $197\times260+199=51,419$ is subtracted. These three numbers, 121, 17, and 51,419, the last being in accordance with the correction which I gave above, are actually provided in the manuscript with the red ring, which indicates the subtrahend, and therefore stands for the minus sign with the Maya.

By this subtraction the three following numbers are obtained:

1. 1,272,423; that is, day XIII 20, sixteenth day in the first month, year 12 Muluc.
2. 1,268,523; that is, day XIII 20, eleventh day in the seventh month, year 1 Ix.
3. 1,486,923; that is, day XIII 20, first day in the fourteenth month, year 1 Kan. This day, therefore, divides the year, as was previously pointed out, into a tontlamatl of 260 days and a period of 104 days.

These numbers are not in the manuscript, but as usual in such cases they must be calculated by the reader. Why were not 260 days less deducted to obtain in this way the beginning of a katun, the first day of the first month in the year 1 Kan? I believe this was omitted in order to avoid the unlucky new year's day. I am confirmed in this opinion by the fact that the same date, 1, fourteenth month, computed to be sure from IX 1 and in a different katun, also results from the black numbers of the fourth serpent, on page 62.

The three numbers found by computation now stand in a much clearer relation to one another than those set down in the manuscript.

1. The difference between the first and the second number is $3,900=15\times260$.

That this difference is intentional is confirmed by the number 39,000 resulting from the two numbers in the serpent on page 69, which are nearly ten times as large as those mentioned here. There the two numbers are 12,381,728 and 12,391,470, from which must be subtracted the differences on page 73, 34,732 and 83,474, and the resulting remainders are 12,346,996 and 12,307,996, whose difference is exactly 39,000.

2. The difference between the third and first numbers is 214,500; that is, exactly fifty-five times 3,900, plainly proving that nothing has been left to accident here.

3. The difference between the second and third numbers must therefore be 218,400, or fifty-six times 3,900. It should be noted here that 56=7×8 and 7 : 8 :: 91 : 104.

Now, in this 218,400 are united all the properties sought in the fundamental series. It is 2,400×91 (therefore also equals 600×364)= 2,100×104=840×260.[a] To be sure, 3,640 already contains these factors, but the fulfillment of prophecy was not sought in such close proximity, else the prophet might easily have been held accountable. In addition, 218,400 has the desirable property of being composed of 600 ritual years of 364 days.

The number 218,400 appears to me now as the real objective point of the computation, or rather as its starting point, for the original computer must have begun at that point in order by calculating backward to reach the three apparently unimportant numbers which the manuscript records, and then evolve from them such a remarkable result.

In the last column but one of page 31 our passage presents a number, 2,804,100, which occupies a wholly isolated position in the manuscript, as it is nearly twice as large as any of the other large numbers, except those found in the serpents. This number ought to allude to the year 9 Muluc, and to the thirteenth day of the eighth month, yet that seems to have no importance. At all events it denotes the day IV 17. On considering its remarkable properties we find:

1. It is equal to 10,785×260.

2. It is equal to 17,975×156. The last is the difference between the days IV 1 and IV 17. From this follows:

3. It is equal to 35,950×78. 78 is the difference between IV 19 and IV 17, and between IV 1 and IV 19.

4. It is equal to 719×3,900. We have above already recognized 3,900 as a very important number.

But 2,804,100, on account of its magnitude, awakens the suspicion that it may be composed of two of the ordinary large numbers. These might be—

5. It is equal to 1,308,580+1,495,520; that would signify 14,380× (91+104).

6. It is equal to 1,380,600+1,423,500; that would signify 3,900× (354+365.)

This shows, as was evident from number 4, the important 3,900, but it divides the 719 mentioned there into the lunar year, 354=6× 29+6×30, and the civil year. I confess I have met this nowhere else with the Mayas, except in the Dresden manuscript, pages 51 to 58, where we find the often repeated 177=354÷2.

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[a] 185,120 + 33,280=218,400.

We might include here the two important numbers 14,040 and 18,980, of the first of which 260 and 360 are factors, as 260 and 365 are of the second. Then we see:

7. It is equal to 147×18,980+14,040.
8. It is equal to 200×14,040—3,900.

But it would be unsafe to attempt to penetrate deeper into the sense and purpose of these numbers until new light is shed from without.

I have still to speak of the upper right-hand corner of page 31A, the greater part of which is unfortunately destroyed. The fifth and last column is entirely destroyed. It may have contained one more number of the series, whose loss is not to be deplored, but above it were, perhaps, one or two glyphs whose loss is sadly felt.

There are five or six glyphs in the fourth column preceding. Of these only the lower four are to be seen, the first two only indistinctly. I have already said something about them in 1891 in the Berlin Zeitschrift für Ethnologie, volume 23, pages 141 to 155.

Of these four signs I must leave unnoticed the second from the top, where we see a red 6 peculiarly introduced.

The first sign is an Imix with prefix and probably also a sign over it. I adhere to the opinion that this denotes the katun period, 18,980 days, or perhaps a multiple of it.

I have attempted to explain the third sign as 24×365 days, or the triplicate of the sacred period of eight years, that is, the so-called ahau of 8,760 days, and I still consider it in a measure a probable solution, especially in view of the passage on page 73 at the top.

Finally, the lowest sign is undoubtedly the one for 7,200 (20×360) days, that I have found provided with a prefix in manuscripts and inscriptions, which probably indicates a multiple of this period.

It is most remarkable, however, that these three signs are found very near each other in three other passages of the manuscript. On page 61 the sign for 8,760 occurs in the eleventh, the sign for 18,980 in the twelfth, place in the second column, and the sign for 7,200 in the fourteenth place of the first column. On page 70 the sign for 18,980 occurs in the fourth, the sign for 8,760 somewhat lower in the third, column, and two places below this the sign for 7,200. Finally, the three signs all occur in close succession on page 73 at the top, in the same order as on page 31.

It is therefore my opinion that a prophecy is the real purpose of this passage, as of all similar ones. For, of course, no one believes that these are mere exercises in arithmetic or directions for them.

But now the question naturally arises, What is actually prophesied here? We find nothing said about it, and there would hardly be room for it in the manuscripts. We might conjecture that an omen was connected with certain numbers and with individual days, as we actually find such omens mentioned in the calendar of Perez given by Stephens. But it is also possible that the cunning priests avoided committing their prophecies definitely to writing and that they left them to the chances of verbal transmission and tradition. Finally, the graphic system of the Maya, which never even achieved the expression of a phrase, or even of a verb, is too imperfect to serve as a medium for the transmission of prophecies; at any rate, it could only have done so very inadequately.

THE SERIES OF NUMBERS, DRESDEN CODEX, PAGES 51 TO 58[a]

The most difficult and ingenious number series of the Dresden codex, which occupies the upper half of pages 53 to 58 and the lower half of pages 51 to 58, has already been discussed by me several times, the first time and most minutely in 1886 in my Erläuterungen, pages 33 to 34 and 68 to 70. But since then my comprehension of these numbers has been so enlarged that a new treatment of this important subject seems imperative.

This passage, however, is organically connected with the immediately preceding pages 46 to 50, page 24 having briefly treated of the contents of the two sections (see Zur Entzifferung der Mayahandschriften, IV). The purport of pages 46 to 50 is the bringing into harmony of the apparent Venus year of 584 days, the solar year of 365 days, and the tonalamatl of 260 days, and this is accomplished by means of three series, each of which extends over 37,960 days, for that length of time is equivalent to 65 Venus, 104 solar, or 146 tonalamatl years.

The corresponding problem on pages 51 to 58 is, first of all, to find an agreement between the apparent Mercury year of 115 days and the tonalamatl of 260 days, and this agreement is afforded by the period of 11,960 days$=104\times115=46\times260$. Curiously enough, this period includes as many Mercury years as the preceding period contained solar years.

The upper part of pages 51 and 52 treats of these 11,960 days, with regard to which I need not go into further detail here, since the greater part of this passage is occupied by a series whose difference is exactly 11,960.

It is most interesting to note that the Maya also sought to bring the revolution of the moon into connection with this period, and to observe the manner in which they did it. For the revolution of the moon, which we assume to be 29.53 days, in any case demands a fractional computation, of which the Maya either knew nothing, or which they carefully avoided, just as did the ancient Egyptians, who were familiar only with fractions having 1 for their numerator, and at the utmost with the fraction $\frac{2}{3}$ (see Hultsch, Die Elemente der ägyptischen Teilungsrechnung, 1895, page 16).

But the Mayas knew the revolution of the moon too accurately not to have seen that the period of 11,960 days could not be made to coincide with a multiple of lunar revolutions. With 405 lunar revolutions they obtained only 11,958 days, and this number is actually the highest of the series on the second half of page 58.

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[a] Zur Entzifferung der Mayahandschriften, VII, Dresden, Jan. 16, 1898.

In order to make the series of 11,958 days applicable to one of 11,960 days, they employed a most ingenious device. As the starting point for each term of the series they took not a single day, but three consecutive days: For the first term, XI 4, XII 5, XIII 6; for the last, IX 2, X 3, XI 4. So the first day of the first term was actually 11,958 days distant from the first day of the last term, but the first day of the first term was distant 11,960 days from the third day of the last term.

At all events, the whole period of 11,958 days was first divided into three equal periods of 3,986 days each. In order to divide these smaller periods still further the term of 177 days was used, as far as this was practicable; but 177 is the half of a lunar year of 354 days, which is composed of 6 months of 30 days and 6 months of 29 days; that is, to each month, in round numbers, are allowed 29.5 days.

177 is, therefore, equal to $3\times29+3\times30$; but the average of 29.5 days for the duration of a lunar revolution is a little too small. In order to raise it to the most exact value possible, in certain places of the series of two other numbers were introduced, viz: $148=2\times29+3\times30$ and $178=2\times29+4\times30$; 148 is equivalent to 5 months of 29.6 days and 178 to 6 months of 29.666+ days. Now, we must see in what proportion these 148 and 178 days were distributed among the periods of 177.

First we see that the term of 3,986 days, that is, a third of the whole period, was divided into three sections of 1,742, 1,034, and 1,210 days in the following manner:

$$\begin{array}{rl}1,742= & 8\times177+\ 148+\ 178\\ 1,034= & 4\times177+\ 148+\ 178\\ 1,210= & 6\times177+\ 148\\ \hline 3,986= & 18\times177+3.\ 148+2.\ 178\end{array}$$

This equals 135 months of 29.526 days each. How did the Maya express this fraction? Perhaps it will be shown in the future that in accordance with their vigesimal system, they approximately denoted it thus: $29+\frac{1}{2}+\frac{1}{40}+\frac{1}{800}$.

The whole period of 11,958 days was therefore divided in the following way:

$$\begin{array}{l}3\times1,742=24\times177+3\times148+3\times178\\ 3\times1,034=12\times177+3\times148+3\times178\\ 3\times1,210=18\times177+3\times148\\ \hline 3\times3,986=54\times177+9\times148+6\times178\end{array}$$

For every six divisions by 177 there is, then, one by 148: for every nine divisions by 177, one by 178.

Since 177 and 178 each embrace 6 months and 148, on the other hand, embraces 5 months, the whole length of the period equals 405 months, which are divided into 69 periods.

All this had to be discussed before I could communicate the entire series itself. I will here set down the numbers and join to them the difference between each number and the preceding one (in the case of the first, therefore, the difference between that and the zero point), just as they are given in the manuscript. I have placed an asterisk where I have corrected a number, the manuscript in the corresponding places containing an error in writing or in computation. The three columns correspond to the three thirds of 3,986 days each, the two horizontal spaces separate the periods of 1,742, 1,034, and 1,210 days.

	(Page 53a)		24	4,163*	177	47	8,149	177
1	177	177	25	4,340	177	48	8,326	177
2	354*	177	26	4,488	148*	49	8,474	148
3	502	148		(Page 58a)		50	8,651	177*
4	679*	177	27	4,665	177		(Page 55b)	
5	856	177	28	4,842	177	51	8,828	177
6	1,034*	178*	29	5,020	178*	52	9,006	178*
	(Page 54a)		30	5,197	177	53	9,183	177
7	1,211	177		(Page 51b)		54	9,360	177
8	1,388	177	31	5,374	177	55	9,537	177
9	1,565	177	32	5,551	177	56	9,714	177
10	1,742*	177	33	5,728	177			
11	1,919	177	34	5,905	177	57	9,891	177
12	2,096*	177	35	6,082	177	58	10,068*	177*
13	2,244	148	36	6,230	148		(Page 56b)	
	(Page 55a)			(Page 52b)		59	10,216	148*
14	2,422*	178*	37	6,408	178*	60	10,394	178*
15	2,599*	177	38	6,585	177	61	10,571	177
16	2,776	177	39	6,762	177	62	10,748	177
17	2,953	177	40	6,939	177		(Page 57b)	
18	3,130	177		(Page 53b)		63	10,925	177
	(Page 56a)		41	7,116	177	64	11,102	177
19	3,278	148	42	7,264	148	65	11,250	148
20	3,455	177	43	7,441	177	66	11,427	177
21	3,632	177	44	7,618	177	67	11,604	177
22	3,809	177	45	7,795	177		(Page 58b)	
	(Page 57a)			(Page 54b)		68	11,781	177
23	3,986	177*	46	7,972	177	69	11,958	177

No one who is familiar with the carelessness of the Maya manuscripts will be surprised that I should pronounce 20 of the 138 numbers of the manuscript incorrect. Moreover, the 20 errors are lessened by the fact that six of them are really one and the same, for in all of these six cases, where the difference is 178, the writer has overlooked this and mechanically written down the usual 177, although the numbers and days of the series quite correctly indicate 178. Moreover, the three errors in groups 58 and 59 are only one, for the author had confounded the differences 177 and 148, and was, therefore, obliged to write the number 10,039 instead of 10,068, which will find confirmation later. From this it follows besides that the writer was at the same time the computer, consequently the actual author.

I must further call attention to the regular position of the differences 178 and 148. In the three periods of 1,742 days 178 is always in the sixth place, in those of 1,034 days it is always in the fourth place. It appears, therefore, in groups 6, 14, 29, 37, 52, and 60, that is to say, at intervals of 8, 15, 8, 15, 8 groups; in the periods of 1,210 days it is wholly wanting. The difference 148 in the nine divisions is always in the third place, that is to say, always close to the pictures, of which we shall presently speak; therefore, in groups 3, 13, 19, 26, 36, 42, 49, 59, 65, that is, at intervals of 10, 6, 7, 10, 6, 7, 10, 6 groups. We can not yet look further into the causes of this curious fact.

But I must refer to a pregnant error. Groups 22 and 23 quite correctly have the difference 177, but the writer in this single place sets down 178 and consequently computes the three days belonging here as VII 11, VIII 12, IX 13, instead of VI 10, VII 11, VIII 12, and from here to the end he is always one day in advance, so that group 69 on page 58 closes with the days X 3, XI 4, XII 5, which ought to be IX 2, X 3, XI 4.

Now it is important to determine the zero point belonging to this series, for every series of this manuscript conceals it. It must be 177 days before the first group, that is, before days VI 1, VII 2, and VIII 3, which leads to the days XI 4, XII 5, and XIII 6.

Of these days the middle one, XII 5, is by far the most important; it occurs on the upper half of page 51 six times, on page 52 four times.

On page 51, in the first column on the left, we first find the normal date and starting point of the computation, the day IV 17, as the eighth day of the eighteenth month in the year 9 Ix, but under it our day XII 5. Below the latter there is an 8, beneath this number the character kin ("sun", "day"), and combined with the latter the character imix, with a sign above it clearly denoting "combination", "union". In the Zeitschrift für Ethnologie, 1891, page 152, I have already ascribed the meaning of a katun (18,980=52×365 days) to this combination, and I still hold this opinion.

This group may, therefore, signify the 8 days which elapse between IV 17 and XII 5, but it may also denote the period of 8×18,980=151,840 days; probably it signifies both at the same time.

Two numbers are set down with this day XII 5, one in red and one in black: 1,578,988 on page 51 and 1,412,848 on page 52. The first number points to the sixth day of the eighteenth month [Cumku] in the year 6 Kan; the second, to the first day of the fifteenth month [Moan] in the year 6 Muluc.

From the year 6 Muluc to the year 6 Kan there are 39 years, or 14,235 days; from the first day of the fifteenth month to the sixth day of the eighteenth month there are 65 days; therefore the two dates are separated by an interval of 14,235+65, or 14,300 days, unless a round number consisting of multiples of a katun (18,980 days) comes into question. But 1,578,988—1,412,848 equals 166,140. Again, if 14,300 is subtracted from this last number, the remainder is 151,840, actually then 8×18,980 or 416×365 (solar years) or 260×584 (Venus years) or 52×2,920 (Venus-solar periods). Thus I am justified in having really read 8 katuns on page 51.

Moreover, I found this number 151,840 by computation once before in the manuscript. Compare my fourth article in this series, where I pointed out that it is the difference between the two numbers 185,120 and 33,280 on page 24 of the manuscript. On the last-named page, if my restoration of the effaced passage is correct, this same number stands as the highest of the series, actually set down as the quadruple of 37,960, in which the solar year, the Venus year, and the tonalamatl accord.

All these remarks relate to the day XII 5, the middle one of the three days XI 4, XII 5, and XIII 6. But the third day, XIII 6, also demands consideration, for on it depends the great series that begins on page 58 at the right and extends over the whole of page 59, which has for its difference 780, in which I recognized the period of the apparent revolution of Mars.

We must now leave the clear domain of numbers and enter a mysterious realm in which science thus far has reaped but a scanty harvest, and on which I, too, can throw but little light. As on pages 46 to 50 at the end of each period of 2,920 days there are three pictures, so there are pictures, ten in all, inserted between the different numbers and symbols.

One of these pictures, the eighth, on page 56b, stands in the wrong place in consequence of the error in computation which I discovered in groups 58 and 59. It does not belong before, but after, group 59, the first on page 56b. This the manuscript itself suggests, for in group 59 the two glyphs usually standing above each group are missing, and in their stead we find a character resembling a snail. But this, according to my Erläuterungen, page 29, is nothing more than an emphasized zero, which indicates that the section marked by a picture closes with this group.

When this error is corrected, we see that the ten pictures stand thus on the following pages and after the following numbers of the series:

1	53a	502
2	55a	2, 244
3	56a	3, 278
4	57a	4, 488
5	52b	6, 230
6	53b	7, 264
7	54b	8, 474
8	56b	10, 216
9	57b	11, 250
10	58b	11, 958

From this it follows that a picture is assigned to each of the nine sections which form the series, yet never at the beginning or end of the section, but only after the expiration of $502=2\times177+148$ days. The intervals of time between the pictures, therefore, amount to 1,742, 1,034, and 1,210 days, exactly the same as the duration of the separate nine sections. The last picture alone is distant 708 days from the last but one, and besides has peculiar characteristics, and consequently must be specially discussed. But these 708 days at the end and the 502 days at the beginning again quite regularly make 1,210 days.

Now it is easy to suppose a new series in these nine pictures, which is interpolated in the original one, a series, in fact, whose zero point falls on the day 502. We shall, therefore, always have to subtract 502 days from the days occurring in the manuscript. This new series is then represented in the following manner:

1	53a	0
2	55a	1, 742
3	56a	2, 776
4	57a	3, 986
5	52b	5, 728
6	53b	6, 762
7	54b	7, 972
8	56b	9, 714
9	57b	10, 748

We are struck by the fact that the final number 10,748 corresponds so closely to Saturn's period of revolution, which is computed at 10,753 days. There is no reason why the Mayas might not have been familiar, not merely with the apparent, but also with the actual revolution of this planet, first, on account of the slowness of its movement, and, secondly, on account of the absence of retrogradation, which is so important in the inner planets. Moreover, the apparent revolution of Saturn (378 days from one superior conjunction to the next) could not be made to agree with the length of the solar year. I will immediately offer a further proof of my theory.

All these pictures are joined at the top to those rectangles of which I have spoken in my Erläuterungen, page 16, and which always contain two or three glyphs, that, with much hesitation, I was inclined to interpret as the symbols of the sun, moon, and planets. No serious contradiction of this theory has thus far ensued.

As the symbol of Saturn, I indicated in the article mentioned *a* or *b*, figure 109: These figures are actually found in all of the nine pictures with the exception of the first, which has no such rectangle, the place, therefore, where the zero point is concealed, according to the true Maya method.

But I go still farther in my bold hypothesis. The time assigned to Jupiter for its apparent revolution is 397 days. I believe that the Mayas adopted 398 days for the period. In the article mentioned I have taken to be the symbol of Jupiter: *c* or *d*, figure 109.

This character occurs in pictures 4, 6, 7, and 9. The numbers belonging to them, reduced for the revolution of Saturn, are 3,986, 6,762, 7,972, and 10,748. But in addition I include, as the zero point, the place where the sign has been suppressed, the picture 3, that is, the number 2,776, and I also include picture 10, which is not reached by the revolution of Saturn and has the number 11,958.

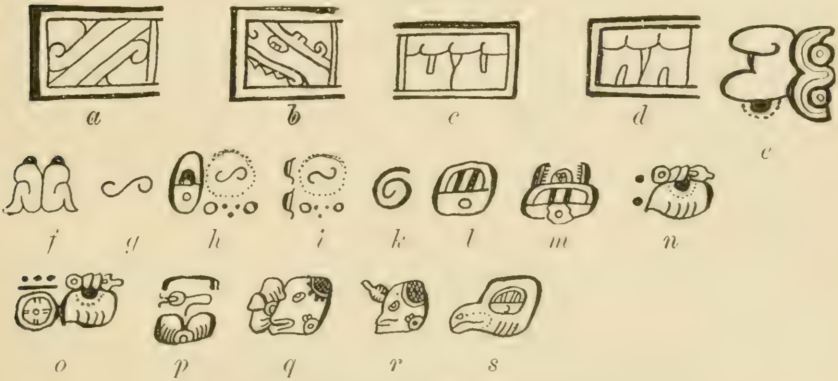

FIG. 109. Glyphs from the Dresden codex.

If these numbers are compared with 398, that is, with the apparent revolution of Jupiter, then we have the following result:

3______ 2,776= 7×398−10
4______ 3,986=10×398+ 6
6______ 6,762=17×398− 4
7______ 7,972=20×398+12
9______10,748=27×398+ 2
10______11,958=30×398+18

The differences, 10, 6, 4, 12, 2, 18, in comparison with 398, are all so small that the numbers, 2,776, etc., might very well have been considered as approximate multiples of the revolution of Jupiter. Let us compare the following numbers, which do not come near coinciding with it:

1...... 502= 398+104
2...... 1,742= 4×398+150
5...... 5,728=14×398+156
8...... 9,714=24×398+162

Those belonging to the latter four pictures have in fact no Jupiter symbol. Further, the regular progression from the seventh to the tenth, seventeenth, twentieth, twenty-seventh, and thirtieth multiple in the six equations given above somewhat increases the credibility of my view.

I will not go into particulars here in regard to the rest of the glyphs found in the rectangles. That task must be undertaken some day in a wider connection. For these rectangles are by no means a peculiarity of the Dresden codex, as it has them in common with the other Maya manuscripts, while, excepting one trace in Codex Telleriano-Remensis, I have not found them in the Aztec manuscripts.

Concerning the pictures, I regret that I have only detached remarks to offer, and not, as I always desire to do, a definite, concise result of my investigations. I find human figures four times, not counting the tenth picture, as follows:

Picture 1, page 53a, has the death god, A, sitting and pointing upward.

Picture 2, page 55a, has the head of a deity, probably D, yet with the suggestion of a beard, and on his brow the symbol of the sun. The head is surrounded by a black and white striped ring.

Picture 3, page 56a, has the head of B, again with a beard; above it, kin (the sun). The head is encircled by a stripe, black on the left, white on the right.

Picture 6, page 53b, has a hanged female figure, which Schellhas (Göttergestalten, page 11) believes to be the Maya goddess Ixtab, the goddess of the halter; that is, of the hanged.

The suggestion of a face, perhaps in place of the sign ahau, occurs in picture 4, page 57a, as the center, but on the sides the surface is black and white.

It is significant, furthermore, that kin ("sun") forms the center of the picture four times, viz, in pictures 5, 7, 8, and 9, pages 52b, 54b, 56b, and 57b. In all four cases we see beside the kin one black and one white surface, as we have already seen them in picture 4 and similarly in picture 3. Pictures 8 and 9 are, as it were, disgorged by a snake drawn below them. In pictures 5 and 8, four arrowlike symbols diverge from the kin in four directions, probably the four cardinal points or the four Bacabs. We see two of these symbols also in picture 7 (page 54b), but only on the black, not on the white, side.

Figure 10 is that of a nondescript creature. It has a human form and appears to be diving headforemost from the two symbols of the sun and moon, against which it presses its feet. Above the sun and moon symbols is a rectangle with the signs of Venus and Jupiter. Instead of a head, or perhaps as a mask over his face, this creature has that symbol for Venus which is to be found not only on pages 51 to 58, but also on pages 46 to 50, and above this there is a kind of crown. Between his legs is a symbol which forms a kind of tail and is suggestive of the flint, so often found as the prefix to the Venus sign, only here it is so well formed that it resembles still more the Aztec equivalent, tecpatl.

Of the glyphs above the pictures I can likewise give only an unsatisfactory account. There are properly always ten of them, among them the two signs for the sun and moon; yet the writer has added these sun and moon signs to pictures 1 to 4 only, besides the more elaborate picture 10. From pictures 5 to 9 he has omitted them, as being understood, in order to make the remaining eight larger and clearer. Among the latter are several glyphs of gods, the most distinct being those of A in pictures 1, 5, and 9, and of H in picture 5, besides which there are other uncertain heads, part of them birds' heads, as in pictures 1, 3, 5, 7, 8, 9.

The Ben-Ik sign, to which I have ascribed the significance of a lunar month, we see with pictures 4, 8, 9, and twice with pictures 1 and 10.

I would like to see the symbol of Mercury with the figure in pictures 9 and 10, especially on account of its resemblance to the glyph of Venus.

Pictures 1, 7, 8, and 10 show hands grasping a glyph (a sign for 20 days?).

The enigmatic numbers before the glyphs occur several times, as a 1 in pictures 1 and 10, concerning which I shall say more directly, a 4 twice in picture 8, and a 6 in picture 3.

I have already discussed the hieroglyph in picture 10 (Zur Entzifferung der Mayahandschriften, IV), for they are very similar to those occurring on page 24. I denote them thus:

1______ 6
2______ 7
3______ 8
4______ 9
5______ 10

Of these, 5 is certainly the sign for 7,200, and 6 that for 13×360=4,680. In 7 and 9, on account of the Ben-Ik, I see two months of 29.5

days, that is, 59 days altogether, and in 4 I see the sign mentioned above for 20, together with the 1 that is before the fifth glyph, which is advanced one place by a little cross, hence 21. From this the following result is obtained:

5	7, 200
6	4, 680
7 and 9	59
4	21
	11, 960,

the number arrived at in this whole series.

The two rows of glyphs above the figures on these pages I can not consider as belonging at all to the subject under discussion. I have considered them more in detail in Zur Entzifferung der Mayahandschriften, V.

MAYA CHRONOLOGY

BY

E. FÖRSTEMANN

MAYA CHRONOLOGY[a]

By E. Förstemann

All previous studies of the Maya calendar present some unexplained or baffling points for which an explanation or correction must be sought. I will here state these points in numbered paragraphs in order that I may afterwards refer to them.

1. The series of 20 days is said to begin either with Imix, which view is supported by the Aztec arrangement, as well as by various passages in Codex Troano-Cortesianus, or with Kan, which view is based on the express testimony of Diego de Landa, as well as on the Dresden codex.[b]

2. All computation of long periods of time should, according to my own hypothesis, which I advanced in the year 1887, begin with the eighth day of the eighteenth month. What is the reason for the prominent position of this day?

3. The periods of 24 years, the ahaus, are said to begin with the second day of the Cauac year. Why should this day be chosen?

4. The day XIII 20 is decidedly of great importance in the Dresden codex in cases in which a period of 260 days is not in question, but a solar year divided into four equal parts of 91 days each. How is the prominence of this day in such cases to be explained?

5. Pages 25 to 28 of the Dresden codex, which relate beyond a doubt to the change to the new year, are said actually to treat only of the last two unlucky intercalary days at the end of the year. Why of these only?

6. Calendar dates have a formula like this: III, 2: 13, 3d month. This I explained in 1887 as the second week day Chicchan that is followed by the thirteenth day of the third month. Although I have tried to establish this view, it still seems somewhat forced. How is this difficulty to be obviated?

I have recently reached the conclusion that at the end of the fifteenth or the beginning of the sixteenth century the confusion was observed which arose from the fact that the year was computed only at 365 whole days. In earlier times such confusion was perhaps not possible, because the chronology was probably not based then on the solar year, but on the period of 260 days, the tonalamatl, possibly also on a period of 400 (20×20) days. To obviate this confusion I think they did what has been done under similar circumstances by other peoples; that is, they intercalated 17 days; and, instead of Imix, which had hitherto begun the series of days, Kan, which had already passed, was reintroduced with the days which followed it. Traces are found in Codex Troano-Cortesianus of this older arrangement, for instance, in Cortesian codex on page 31a, and in Troano codex on page 31, whether this is older than the Dresden codex (which my correspondents will not admit), or has been copied from an older manuscript, or was produced in some other region which still preserved the Aztec arrangement. But Landa, who unquestionably spoke of his own time, is thoroughly trustworthy when he gives Kan as the first day, especially as the Dresden codex gives precedence to that day. I need only recall the eight highest figures in this manuscript, those in the serpents on pages 61 and 62, which are all counted from a day Kan. In this way I explain number 1.

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[a] Zur Maya-Chronologie, Zeitschrift für Ethnologie, Dresden, 1891.

[b] This rule, as has been subsequently shown, does not apply to the Dresden codex. C. T.

Number 2 may also be very simply explained. Before the correction of the calendar that eighth day of the eighteenth month, from which all computation of time proceeded, was the twenty-fifth; that is, the last day of the eighteenth month, and therefore of the whole year. At least this was the case every four years. The Mayas therefore reckoned how many days had elapsed since this day as the zero point. The years which followed a year closing with Ahau quite properly began with Imix, the first day of the series; the others, with Cimi, Chuen, and Cib (according to my notation 3, 8, 13). It would be interesting if we could discover anything to indicate that these three days had once been of especial importance (see, for instance, Codex Cortesianus, pages 13b to 18b, where four rows of 52 successive days begin with these very four days, each row with one of them).

New light is now also thrown on number 3. From this starting point of all chronology, this last day of the year beginning with Cib, the period of 24 years then beginning (which was also the period of 15 apparent Venus years) was always computed. The fourth ahau, for instance, began with the year 5 Imix, and each ahau in the same way with this first day until everything was displaced by the introduction of the 17 days. It looks like a modification of this abrupt change that in the place of Imix, "maize bread", its synonym, Kan, "maize kernel", was used, the two glyphs occurring countless times closely connected in the manuscript.

While the first three points are thus explained by my theory of a correction in the calendar, the other three may be explained by an idea which Doctor Seler communicated to me in a letter of December 21, 1890. He wrote to me that in his opinion the years in the Dresden codex did not begin with Kan, Muluc, Ix, and Cauac, but with Akbal, Lamat, Ben, and Ezanab; according to the corrected calendar, therefore, the last days of the year must be Ik, Manik, Eb, and Caban. But Kan, etc., still rank as the principal days, and the years are designated by the first principal day encountered in them. For instance, they are distinctly prominent as principal days in Codex Cortesianus, pages 3a to 6a; Troano codex, pages 33c to 32c and 23 to 20, and Dresden codex, pages 9b and 29c.

New light next falls on number 4. The day XIII 20 (Akbal), wherein the highest week-day number is connected with the last day of the series, is nothing more than the new year's day of the year 1 Kan. These periods of 91 days, therefore, arranged in groups of four, are the 4×91 days which, following the day XIII Akbal, make up the year 1 Kan, as, for instance, in the Dresden codex on pages 32 and 64. In the series to be found on the latter page the significance of the solar year is quite apparent, emphasized by the singularly elaborated sign of the zero in the fourth and the eighth terms of the series; that is, at the close of the first and of the second years.

As Doctor Seler himself writes me, number 5 can also be simply explained. For the Dresden codex, pages 25 to 28, does not treat of the last two days of the year, but far more naturally of the last day of the old and the first day of the new year. I must leave it to Doctor Seler to establish his view by discussion of the pictures and glyphs.

Lastly, number 6 also presents a more satisfactory aspect. For now III 2; 13, 3d month is no longer called 3 Chicchan which is followed by the thirteenth day of the third month, but far more simply 3 Chicchan which is the thirteenth day of the third month. The normal date IV Ahau, 8, 18th month therefore really falls on the eighth day of the eighteenth month and, in fact, as I have always believed, in the year 9 Ix, which, however, according to the new theory began with 8 Ben.

The next step is to attempt further conquests in this realm of glyphs, starting from this firm basis of numbers and computations, and the first thing to be done is to search for pictures which express the conceptions of year, the change to a new year, the beginning of the year, and the close of the year. As the serpent pictures have an undeniable reference to periods of time, so the most perfect symbol for the year, it seems to me, is a serpent forming a closed ring. Such a serpent is found in Codex Cortesianus, page 3a, and inscribed within it the numeral 18, which I am inclined to interpret as meaning the eighteen months. Likewise in Codex Cortesianus, pages

4a, 5a, and 6a we always encounter a serpent with the 18 inscribed within its ring, so that these four leaves readily suggest the four kinds of years.

So, too, I believe I have found a very perfect picture of the change of years in Dresden codex, page 68, above on the left, in the two figures of gods leaning back to back and sitting on a series of astronomic signs, arranged almost like the roof and wall of a house. But this picture belongs to a large section, which begins on page 65 and ends on the left side of page 69. I must here dwell more particularly on this section than I could in my Erläuterungen (Dresden, 1886).

The real nucleus of this section consists of four rows of 91 days each, that is, of a year, of which the detailed explanation is found in six rows of glyphs and twenty-six pictures. Now, believing that I can complete the top row, which is almost wholly obliterated, from the still existing remnants, I read these four rows as follows:

9 XII, 5 IV, 1 V, 10 II, 6 VIII, 2 X, 11 VIII. 7 II, 3 V, 12 IV, 8 XII, 4 III, 13 III.
11 I, 13 I, 11 XII, 1 XIII, 8 VIII, 6 I, 4 V, 2 VII, 13 VII, 6 XIII, 6 VI, 8 I, 2 III.
11 XI, 13 XI, 11 IX, 1 X, 8 V, 6 XI, 4 II, 2 IV, 13 IV, 6 X, 6 III, 8 XI, 2 XIII.
9 IX, 5 I, 1 II, 10 XII, 6 V, 2 VII, 11 V, 7 XII, 3 II, 12 I, 8 IX, 4 XIII, 13 XIII.

The study of these four rows shows that the end of each one of them can again be very well joined to its own beginning, and also that a good connection occurs between the end of the fourth and the beginning of the third, and likewise between the end of the second and the beginning of the first, also vice versa between the end of the third and the beginning of the fourth, and between the end of the first and the beginning of the second. But the second and third rows, on the contrary, stand in no such connection.

We further see that the final point of the first two rows is a day III, that of the last two a day XIII. What is more natural than to think of the two days III 2 and XIII 20, which are of such great importance on pages 62 to 64? Our section, pages 65 to 69, then appears like an introduction to pages 62 to 64 and one part of our manuscript is again made to harmonize with another.

Each row is, as we see, divided into 13 periods of time, whose average duration is 7 days; the four rows therefore form 52 periods of time. Now, we find 26 pictures on these pages; the half of these periods of time is apparently without a picture. Thirteen of the pictures are between the second and third row and 13 below the fourth, but this probably has reference only to the symmetric arrangement of the pages.

It further appears that if we begin at the top with the first row and advance to the second, but begin at the bottom, on the other hand, with the fourth and join it to the third, both rows proceed quite in the same way, and the intervening spaces between the separate days, designated by Arabic numerals, are found to be precisely the same. Thus, therefore, the 26 pictures, in certain circumstances, might hold good for both rows, that is, for all the 52 periods, although the starting points are different. Still I am inclined to think that the pictures as well as the glyphs all refer to the two lower rows only; that is, to the more important of the two days, XIII 20.

Now, on page 65 at the beginning (the left) of the lowest row of glyphs we have 9 Kan. Is not this the year here meant, which, moreover, is perhaps not by accident the middle one of a katun beginning with 9 Ix? For, as I have set forth in the Compte rendu of the Congress of Americanists at Berlin, page 742, the beginning of the Maya chronology seems to lie in the year 9 Ix. But the day XIII 20 is the first day of the eleventh month in the year 9 Kan (according to the new theory making 9 Kan the second day of the year); this would be the beginning of the fourth row. If we continue to count with the differences 9, 5, 1, etc., in this fourth row, it ends with the twelfth day of the fifteenth month, and the third row begins with the third day of the sixteenth month. The ninth member of this third row would be the twenty-first day of the eighteenth month, the tenth the second day of the first month; that is, the day 10 Muluc, which gives the name to the new year. And precisely in this place, page 68, above on the left, we find that Janus picture. To make the meaning of this still more clear there are two characters above the gods strongly resembling a horizontal 8 (∞) (*g*, figure 109). I think this is the hieroglyphic abbreviation for two contiguous serpents, that is, two years; and among the glyphs above them, the first in the top line is nothing more than the graphically abbreviated repetition of the two persons leaning against each other (*f*, figure 109). But to the right of this we find a very composite glyph, one part of which again very closely resembles the horizontal 8, *h*. I hope that we are standing on a firm basis. Indeed, even the preceding ninth picture (page 67, above on the right) may be an allusion to the close of the year; it is a striding god, at whose feet lies a little deity apparently inclosed in a sack. Therefore this may represent the old year and the young year which has not yet crept out of its shell.

It seems evident to me that this new year is a Muluc year from the continuously pouring rain of the tenth to the thirteenth pictures, as well as from the storm or lightning beast and its attendant in picture 11, known to us particularly from the Dresden codex, pages

44 to 45 (see Seler's article in this journal, 1888, pages 68 and 69 of the special reprint).

Two pictures occurring in this place can also be seen in another passage of this manuscript. First, we find the two figures seated back to back on page 22, on the lower right, as the last of the upper row of glyphs. Here is more distinctly to be seen than in the passage just mentioned that instead of heads they have two half (rising or setting) suns. I can not positively assert that there is a reference here to a new year, since I have not succeeded thus far in understanding the calendar date of the beginning of the various tonalamatls of the manuscript (which would be a very important step in advance). A single, apparently quite naked, person of this form often appears in the manuscript; for instance, there is one on page 58 on the right, and even with head downward, together with a Venus sign, on pages 57b and 58b. If this should not be intended to represent persons, but cloud pictures behind which a star rises or sets, my interpretation in regard to the new year would not be affected. I may add that Doctor Seler, in his Charakter der Maya-Handschriften, page 9 of the special reprint, really regards them as representations of human beings.

We might compare the picture on the left of the page 33c with the deity inclosed in a sack; but we must observe that Doctor Seler (Charakter der Maya-Handschriften, page 88 of the special reprint), probably correctly, takes this to be a hollow in a tree (the cloud tree).

I am inclined to see another kind of designation for the close of the year on page 53, below, of the Dresden manuscript, to which I must here confine myself. There we see a dead woman suspended by a rope, which is fastened to astronomic signs. Above her are eight glyphs arranged in groups of four in two perpendicular rows. The third glyph in the second row has in the middle the same 8-shaped figure, but this time in a perpendicular position. I take the sign attached to the right of this to be the abbreviated glyph for the west or the Ix year (see Schellhas, Die Maya-Handschrift zu Dresden, 1886, page 70); but the one added on the left, it seems to me, is not the expected sign for the north, but a human arm, as if it were an allusion to the hanged woman. Is not the hanging figure intended for the water goddess Xmuc, and the whole meant to represent the death or end of a Muluc year, the beginning of an Ix year? It is probably meant for 13 Muluc and 1 Ix, but this is not absolutely certain, especially as the periodic series, which is singularly composed of 54×177, 9×148, and 6×178 days, still puzzles me greatly (see another conception of the hanged woman in Schellhas, same place, page 45).

In the two passages which have been discussed more in detail, pages 68 and 53, we see the sign resembling an ∞, and this we must consider further. On page 2b, on the left, we find it very distinct as the headdress of a god, but whether here, too, it has reference to the new year is uncertain. In other passages I believe that the sign *g*, figure 109, is a mere abbreviation of it, as on page 38a on the right. There the picture represents the god with the serpent's tongue holding the sign Kan in his hand; above is the usual glyph of the god, and above this a composite sign, *h;* that is, the character referred to here, with the usual dots that signify movement or progression; to the left of it is the sign for the east, the Kan year. Does this signify the end of a Kan year? Then, on page 41b, on the right, below, is the picture of a new god (the god of the new year?), apparently being carved out of a tree. The first among the glyphs is that of the west, probably combined with the sign for the close of the year, which we shall meet with later (the pile of stones on which the image of the god is being erected). Again, on page 52b, where, 1,034 days before the picture of the hanged woman, we see *i* as the first glyph. To this belongs a heraldic figure below, beneath astronomic signs, of which the left side is colored yellow and the right side black, and which bears the sign for the sun in the center. It is not improbable that this, too, may mean the new year, since there is a margin of 178 days, which would warrant it, but more than that can not be asserted.

Here I would like to point out another sign, which perhaps, like the preceding one, originated from the serpent, and therefore perhaps also refers to the year. I mean the spiral, or snail-shell line, *k*. We encounter it on page 29c both in the middle picture and in the one on the right. In the former we find it in the water, at the foot of a black divinity; beside it, the sign kan, over which lies an alligator. Among the glyphs above we see the abbreviation for the east (the Kan year); on the right above it, the entire sign for the west. Concerning the god seated on the right (the same as the one with the serpent's tongue, only white here), we observe over his head the sign kan and a fish above that; in his right hand, a bird's feather; in his left, the spiral, combined with the abbreviated glyph for the west and south. Among the glyphs above is that of the south in both full and in abbreviated form.

This group is continued on page 30c, where the god, at whose feet there is an animal, holds a spear in his left hand, point downward; directly above it we find our spiral combined with the abbreviated glyphs for the west and south. Among the glyphs above we again find those for the west and south.

These three pictures, however, are preceded by a fourth, which completes the whole row. Here the god is in a boat; close by his head is the picture of a bird's head; among the glyphs above we find that of the north; the spiral is absent. For the rest, there is an interval of 16 days between each picture and the next one.

Let me note incidentally that this passage 29c to 30c is directly connected with 29b to 30b, possibly with 29a to 30a, which may help us to find a solution; but this is not the place for further details.

In close proximity to this group, on pages 33 to 35b, we find the spiral in a second group, which here, as well as in the other, forms the end of a row of a tonalamatl. On each of these pages on the left sits the same god in the jaws of a coiled serpent. In the circle formed by the serpent there is water, and in the water invariably the numeral 19 (see the 18 in the passage from Codex Cortesianus, which we took as our starting point). The glyphs above invariably contain the spiral with the numeral 9 before it. I have spoken of the series of days belonging to this passage in my Erläuterungen, page 57.

We began with the serpent and have insensibly returned to it. I will here also mention page 56b, where, as the last glyph in the lowest row, we find one which consists of the abbreviated sign for the south and a serpent. This is the same series in which we find the woman hanged by the neck, and it is 3,484 days after the period of time to which that refers. If I am right above in determining that period of time then this refers to a year 10 Cauac, and Cauac certainly corresponds to the south.

It may further be mentioned here that the serpent often occurs as a head ornament, as on page 9c on a god, and on pages 15b, 20a, and 23b on a woman. In the third of these four passages the glyphs are obliterated; in the second the glyph of the woman is combined with the sign for the north; in the two others I find nothing relating to a period of time.

Here we leave the domain of the serpent and come to a wholly different sign, which we can perhaps regard more definitely as a sign of the change of years, but never of the year itself. I mean the sign ·X· or ·)(·, the elements of which, according to Maya usage, may of course be placed vertically as well as horizontally beside each other. If this really indicates the change of years, then it is quite natural to find it combined generally with two glyphs of adjacent cardinal points. With Kan-Muluc we should expect to find east-north, etc. It must be said at once, however, that as a rule west-south is preferred, as if it were not at all essential to designate the particular cardinal points with exactness. So we find it in the center of page 27, where we might expect south-east.

On page 18c we see it with these cardinal points as the glyph of a woman who carries the sign west-south on her back. The tonalamatl to which it belongs begins with the normal day IV 17. If this day is really the normal date, the eighth day of the eighteenth month, then the picture may coincide exactly with new year's day 10 Cauac, for the series of days announces that 15 days have elapsed and that 33 are yet to elapse. Here, too, the cardinal points, west-south, are appropriate.

On the same page, 18a, at the top, a woman bears in her hands the signs for both cardinal points, above which our sign once more appears. The glyphs belonging to it are effaced, and nothing can be determined from the series of days.

The next page, 19c, again shows the signs west-south on the back of a woman, with our sign combined with these in the glyphs.

Very peculiarly combined with the west and the sign cimi, but varying somewhat from its usual form, it appears on page 8c in the first row of glyphs.

We have still to consider pages 46 to 50, on which we should expect to find this sign before all, as here terrestrial and Venus years are made to accord. We find it at once on page 46 in the last place in the lowest line. The date 2, 17 month, ought to be here, but the writer has placed the little cross between the two dots of the 2, possibly to indicate that a Venus year of 584 days closes here. On the right of the same page the line before the last again begins with our sign, as if to join it to the passage already mentioned. If this belongs, as it seems to do, to the third row of calendar dates, then it certainly coincides with a transition from the Kan to the Muluc years.

The next three pages lack this glyph, but on page 50 it occurs almost in the same place in which we found it on page 46 (on the right side, the first sign in the lowest row), here again combined with the glyphs for west and south where the fifth Venus year has expired concurrently with the eighth terrestrial year, although not exactly at the close of the latter.

So much for the cross between two dots. The dot between two crosses, which also occurs, seems, on the contrary, not to belong here. One dot with one cross might easily be an abbreviation for the numeral 20.

We now come to another sign for year, but which is, as I must state at once, that for the old official year of 360 days, which does not include the 5 unlucky days intercalated at its close. I mean the glyph *l*, which sometimes has three dots as a suffix, sometimes with other appendices. I shall in future call it the 360 sign for the sake of brevity.

Turning next to pages 25 to 28 of the manuscript, which assuredly treat of the change of years, we find this sign on each of them below on the left, instead of the pile of stones on which the gods of the year were placed at the close of the year. It also occurs on every page in the row of glyphs which divides the second section from the third, even twice on page 27. It appears also in the partially obliterated upper lines of pages 26 to 28, on page 26 actually three times, once with the sign Ix as a prefix, and once with Cauac, and this particular page treats of the transition from Ix to the Cauac years. Thus the meaning of the sign seems here sufficiently established.

Let us now turn to page 50. Here we find once more the same figure as the second sign in the first line of calendar dates, with a prefix which signifies the number 20 and a somewhat unintelligible superior affix. The whole must mean, as I have already stated in my Erläuterungen (1886), page 12, the twentieth day of the eighteenth month, the official close of the year. This is another confirmation of my theory.

There is certainly a reason, although it is still unknown to me, why this 360 sign agrees wholly or almost wholly with the glyph for the sixteenth month, often rendering it difficult to decide with which one of the two we have to deal. In my Erläuterungen I still confounded the two and besides confused them with a third sign, which I will now discuss.

According to the Maya numeral system the number 360 is the unit of the third degree; that of the fourth is 7,200. May not this also, that is, the period of 20 official years, be represented among the glyphs? I think I recognize this glyph in an expansion of the 360 sign, *m*. We will call this figure the 7,200 sign.

In order to establish this theory we next turn to page 58. In its lower half, on the left, a series of 11,958 (more exactly 11,960) days closes with a most striking picture. Above this picture stand ten glyphs in the following order:

1	6
2	7
3	8
4	9
5	10

The middle signs, according to position 3 and 8, are the sun and moon, but the middle ones in the series of numbers, 5 and 6, are the 7,200 and 360 signs, the former provided with a 1 (or a 20, if we so read the 1 with a little cross under it), the latter with a 13. But the Maya figures for 11,958, the number belonging here, are 1, 13, 3, 18. Nothing, I think, could be more natural than to recognize the signs for 7,200 and 13×360=4,680 in the two glyphs. Together this would be 11,880. I can not yet determine whether the remaining signs indicate the 78 which are lacking to the sum total.

Let us next consider page 61, with its two rows of glyphs running from the top to the bottom. The fifth line from below is here formed by the 7,200 sign with the number 15 and the 360 sign with the number 9. Taken together, this would signify 111,240 days. More numbers from the lines above and below should doubtless be added, but we can not determine which because we do not know in what relation the whole stands to the preceding row (on the right) or to any of the other numbers. We may conjecture that the glyph standing below the 7,200 sign, consisting of the day Chuen with prefix and suffix and the anterior 1, is meant for the month of 20 days. The Chuen sign would not be wholly inappropriate for this signification, as it begins the second half of a month beginning with Imix and thus, as the middle of it, it represents in a certain sense the whole month. Below the 360 sign, however, we see the sun, kin, with a suffix and a prefixed 3. This would indicate that kin, in the sense of "day", ends the whole number, as yet unknown to us, with three units. Such a number belongs indeed to the most important day of this part of the manuscript, the day XIII 20, for the day 17 (Ahau) always corresponds to a number ending with 0.

On the same page, 61, in the same vertical row, the sixth line from the top again forms our 7,200 and 360 signs, the latter forming part of a face and accompanied by an 8. Here again we at least recognize that these two belong together.

As I have proved the parallelism of the two sections in my essay Zur Entzifferung der Maya Handschriften, II, we may expect to find in the last part of the manuscript (pages 69 to 73) something analogous to that which we have encountered in this section. Thus on page 69 we find the same two vertical rows of glyphs and in them again, in the fifth line from below, the 7,200 and 360 signs, the former again with 15, the latter again with 9; below them, the chuen sign, this time with 4, and the kin sign, this time again with 4. We are justified therefore in surmising some large number ending with 4, such as the principal day of this section, the day IX 11, really ought to have, if we begin once more at Ahau=0.

Glancing carelessly farther up the same page we not merely find there our two signs, but we also recognize that the upper 16 glyphs drawn in a blue field correspond exactly to those on page 61, save for slight variations and the substitution for the Moan head of a sign of similar meaning often used in its stead.

The association of the glyphs for 7,200 and 360 days is not a peculiarity of the Dresden codex; it also extends to the inscriptions on stone, which differ so widely from the manuscripts. The inscription on the Cross at Palenque contains the two in close proximity almost a dozen times, the one beside or below the other.

Where the two signs do not occur in such immediate proximity the matter becomes uncertain from the fact of the almost perfect similarity of the 360 sign to that for the month of Pax. I therefore leave the latter quite out of the question. For the 7,200 sign I refer to page 24, first column; page 70, third column, third sign from the bottom; page 73, at the top, second column from the right. It occurs in specially large dimensions on page 60b, which is executed in a unique manner. But I will abstain here from making more remarks, though many suggest themselves, in order not to build farther on a foundation which might give way under our feet.

In order to proceed I must premise the observation that the whole front side of Codex B (pages 46 to 60) now seems to me to be closely interconnected, the wholly isolated, peculiarly enigmatic page 60 forming the conclusion. We know now that pages 46 to 50, the first third of this whole, is a continuation of page 24. It treats of the agreement of the apparent Venus year of 584 days with the solar, or terrestrial, year of 365 days. This is done in three sections, each of which treats of 13 times 8 terrestrial years or 5 Venus years; that is, 13 times 2,920 days, equal to 37,960 days or two katuns or 104 years.

The second section (pages 51 to 58) correspondingly treats of 104 apparent Mercury years of 115 days; that is, the period of 11,960 days.

Thus prepared, let us turn to the upper half of page 52, beginning with the fourth column. Here, at the very top, we find another calendar date, unfortunately partially obliterated, and beneath it, combined again in the manner that I pointed out when discussing pages 61 and 69, the Chuen sign and the 360-day sign, the former combined with 1, the latter with 5. According to my suggestion, this would signify 1,820=7×260. It might be explained by the illegible date above, but it may refer to the seven quite identical columns of days on the left, each 260 days apart from the next ones, thus affording a slight confirmation of my theory.

But directly below it we see the sign *n*, that is, Imix with a mark above it which looks like a union, a tying together, perhaps a variant of the sign composed of the rattles of the rattlesnake, which often seems to indicate a period of time. I take this to be the sign of the katun (52×365=18,980 days), the period at the end of which each day (here represented by the former initial day Imix) once more returns to the same position in the year. In this passage, therefore, there is reference to two katuns, the very period of time which we found to be the subject of pages 46 to 50. Below this sign we find a red 13 repeated 13 times. This can only mean that the two katuns are to be divided into 13 parts, each of which, therefore, as on pages 46 to 50, contains 2,920 days. The 104 terrestrial years are here placed close beside the 104 Mercury years. I think there can be no delusion about this. This presumptive discovery of the katun sign seems to find confirmation close by, in the first column of page 51. Here we read at the top the two calendar dates IV 17; 8, 18th month and XII 5, and below them the group in *o*.

The 8 with the kin beneath it may denote the 8 days which have elapsed between IV 17 and XII 5; but it may rather (for it quite accords with Maya usage to have one number refer to several signs) belong to the katun sign, for the following reasons:

The point of departure in the Mercury series (which I regarded as a Saturn series in my Erläuterungen) is the day XII 5. This date occurs with two numbers: 1,412,848, that is, year 6 Muluc; 1, 15th month, on page 52; and 1,578,988, that is, year 6 Kan; 6, 18th month, on page 51. The first of the two large numbers occurs 166,140 days before the second, but the first date occurs 39 years 65 days = 14,300 days before the second. If we add to this 14,300 the number 151,840, that is, 8 katuns, the result is actually 166,140, and to that this group of signs seems to me to point.

I merely allude in passing to the fact that this katun sign also occurs in the columns on pages 61 and 69 discussed above close beside the other glyphs referring to a period of time.

If we look more closely at the passage on page 61 just mentioned, we find directly above the katun sign a new glyph not yet mentioned, *p*.

We will now look at the last column but one on the upper half of page 73. The uppermost sign is destroyed. Then follow the katun sign, the new sign, the 7,200 sign, and the number 34,732.

Now, everything seems to point to the probability that the new sign is the ahau sign of the value 24×365=8,760. Let us now add the three numbers:

$$\begin{array}{r} 18,980 \\ 8,760 \\ 7,200 \\ \hline 34,940 \end{array}$$

It all refers to the day IV 9. But this occurs 208 days before the normal date IV 17, and to it therefore rightly belongs a —208, and 34,940—208 is really 34,732.

In the lower part of the third column of page 70 are five signs, one above the other. The first of these is the ahau sign (of 8,760 days); the third, the 7,200 sign; and the fifth, the 360 sign. We are prompted to seek the meaning of the second and fourth.

Glyph *q* shows us the second sign. It is the Chicchan head, with a prefix, probably phallic, which we know as an element of the months Yaxkin and Yax, of the sign for the south, etc. Now, when we see that the same Chicchan head, with the same prefix, also occurs on page 61, in the middle of the first column, and on page 69, in the middle of the third column, in a connection, too, quite similar to this one on pages 21c and 23b, but in very different surroundings, we readily reach the conclusion that here, too, a period of time is meant. We find this combination nowhere else in our manuscript. It now becomes probable that the period of time which we are seeking must have a close connection with the above-mentioned supposed ahau, for in this place we see the phallic prefix divided into two parts and furnished with two marks above it. Might it not therefore mean one-third of the ahau, that is, 2,920 days, that important period of 8 terrestrial or 5 Venus years which plays so great a part on pages 24 and 46 to 50? If we turn to those pages we find the sign *r*.

The figure on the forehead seems to be only an abbreviation of the prefix, seen, as it were, from the other side. The passages in question are on page 24, second column above the middle; page 49, fourth column, in the middle; and page 50, on the left below. I find it nowhere else. We might perhaps mention that the Chicchan head, as Doctor Schellhas states in his Die Maya-Handschrift (1886), page 64, belongs to the picture of a serpent on page 35b, but has different, somewhat indistinct, prefixes and superior affixes. The windings of the serpent run in five different directions, and on its body are 8 spots resembling bosses? Can this be an allusion to the 5 Venus and 8 terrestrial years. This might be going too far. Suffice it to say that there are some reasons for thinking that we have really the period of 2,920 days before us.

A glance at page 31a shows us how all these last-mentioned signs belong together. There is the number 2,804,100 in the second column from the right. Above this there must have been six signs. The two upper ones are effaced; then follows a trace of Imix, probably the katun sign with a number before it; then, a very much stained glyph, perhaps the 2,920 sign just discussed; and last, but quite plain, the 8,760 and the 7,200 signs. The destruction or indistinctness of the uppermost signs is especially to be regretted here, as in all probability these signs stood in the closest relation to the large number before mentioned.

So much for the second of the five signs below on page 70. I will now hazard a modest conjecture in regard to the fourth as well. It has the form *s*.

It probably originated in a bird's head. In place of the eye we find a figure which looks almost exactly like the 360 sign. The lines beneath it strongly resemble those in the Imix katun sign. Now, this fourth sign occurs between the third, the old ahau of 20×360, as it were (an ahau of 20 years has actually been found in the original sources), and the fifth, the old year of 360 days. Now, nothing seems more natural than that the fourth sign should likewise refer to the ancient computation of time, and it is easy to suppose this to be an ancient katun=52×360=(72×260). According to this supposition, by no means positively asserted, but merely suggested, the five signs should have the following values of time:

$8{,}760 = 1$ ahau $= 24 \times 365$
$2{,}920 = \frac{1}{3}$ ahau $= 8 \times 365 = 5 \times 584$
$7{,}200 = 1$ old ahau $= 20 \times 360$
$18{,}720 = 1$ old katun $= 52 \times 360 = 72 \times 260$
$360 = 1$ old year

$37{,}960 = 2$ katuns $(2 \times 52 \times 365 = 2 \times 73 \times 260)$

The period of 2 katuns, however, has often proved very important; for instance, on pages 46 to 50. It is also divisible by the Venus year of 584 days, which is not the case with 1 katun.

It should not seem very surprising that the old designations, which must have been already hallowed by use, were not discarded after the introduction of the year of 365 days, and the ahau of 24 years. A greater variety of glyphs enhanced the mystery of writing and the awe with which the priests were regarded.

But here I pause. Above the five signs just now under discussion there are four others arranged in pairs.

I have already expressed the opinion that these signs signify a period of not less than 652 katuns and have tried to give grounds for this view, but it must rest on a firmer foundation before I can promulgate it. I have perhaps already advanced more than will admit of proof.

THE TIME PERIODS OF THE MAYAS

BY

E. FÖRSTEMANN

THE TIME PERIODS OF THE MAYAS[a]

By E. Förstemann

Nature suggested only periods of 20 days to the Maya, because these they could count on their fingers and toes, in four divisions of five each. From this the representation in writing of all numbers up to 20 followed as a matter of course.

The second thing they observed was that the sun, and with it the vegetation, returned to its former condition after about eighteen of such 20-day periods. From this resulted the most ancient solar year, consisting of 360 days, which in later periods was always preserved by the exceptional position of the 5 intercalary days, but soon ceased to be practically employed.

Upon this is based the numeral system which was subsequently in use, in which the unit of the second degree is 20 and that of the third degree 360. That of the fourth degree (7,200) and that of the fifth (144,000) had little or no relation to the actual year, and were probably added later without regard to the length of the year, although the fourth degree may have given rise to the erroneous statement that the Mayas counted by ahaus of 20 years.

These various units were governed by various gods called "lords of the cycle"; see "Lord of the Cycle" in Thomas's Study of the Manuscript Troano, page 29. We find the heads of these lords of the cycles of 144,000, 7,200, 360, and 20 days, for instance, at the beginning of the inscription on the Cross of Palenque (A and B, 3 to 6), together with the glyphs representing these periods. The fifth period, the single day, has no head of a deity, but, quite appropriately, only the instrument of numeration, a hand with its five fingers. The earliest of the inscriptions at Copan, given in Maudslay's book, contain similar figures, and these beginnings plainly give us the dates of the inscriptions.

The Dresden codex shows a decided improvement on this method, inasmuch as the heads of the lords and the glyphs are omitted as superfluous, and, as with us, the value of the numbers is indicated by their position. This is also the case in Codex Peresianus, but I can not interpret the numbers, owing to the condition of the manuscript. In Codex Troano-Cortesianus we find only timid attempts at numbers consisting of many figures, as in the page which connects both parts and in the Troano codex, pages 20 to 23.

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[a] Die Zeitperioden der Mayas, Globus, v. 63, n. 2, 1893.

When at last it became patent that 360 days by no means constituted a full year the numeric system could not be changed, because a multiple of 20 was needed for the third degree; but in order to be able to compute by years it was necessary to add to the length of the year. In all probability the number 364 was chosen because it is divisible by 4, and thus had a certain relation to the four cardinal points and to everything connected with them in mythology.

Many portions of the Dresden codex are based upon this year of 4×91 days, most distinctly on pages 65 to 69, as I have shown in the Zeitschrift für Ethnologie, 1891, page 144. To it also pertain the series with the difference 91 on pages 31 to 32 and 63 to 64. The number 364, however, is not only 4×91, but also 28×13, and this seems to have given rise to the custom of dividing the year into periods of 13 days each, just as the period of 20 days was a natural division of the 360-day year. For nature does not seem to have furnished the number 13, unless the most important parts of the human body, perhaps the ten fingers, together with eye, ear, and mouth, might have suggested it. Otherwise, there may have been a mythologic basis (13 heavens?) for the number 13.

There may have been a time when they wavered between the 360- and the 364-day year, and consequently between the periods of 20 and of 13 days. In order to meet the difficulties arising from this, it was necessary to introduce a period which could be divided by both 20 and 13 days. Thus doubtless originated, not among the people, but among the priesthood, the sacred tonalamatl of 260 days, which had no connection with the duration of either the one or the other year. I believe that I have found a glyph which represents the tonalamatl, combined with the figure 8, in the inscription of the Cross of Palenque, C, 2. The days of the 20-day period were then designated by their already established glyphs and those of the later 13-day period by merely adding numbers; thus 260 different characters for days were easily obtained, just as they are in the Aztec, which therefore thus far agrees both with the method of the Mayas and with that of the Kiches.

The need must now have been felt of bringing these periods of 260 days into accord with the year, and particularly with the old year of 360 days. For this a period of 4,680 days would have been sufficient, in which the tonalamatl is repeated 18 times, the 360 days 13 times, that is, a period in which the 13-day period recurs 360 times.

But this period of 4,680 days seems never to have come into actual use; the triple of it, 14,040 days, having been preferred, a period which certainly lends itself with marvelous adaptability to an immense number of the most various divisions. Like 4,680, it is divisible by 2, 3, 4, 5, 6, 8, 9, 10, 12, 13. But it also admits of still more important divisions: (1) It is divisible by 13, and by the most diverse multiples of that number, 26, 39, 52, 65, 78, etc.; (2) it may be divided by 20 and by its multiples 40, 60, 120, 180; (3) it is divisible by 18, the number of the so-called months of the year, and by several of its multiples, as 36 and 54.

It is, of course, equal to 54×260-day and 39×360-day periods. It, therefore, properly forms the very nucleus of the last section of the Dresden manuscript and appears conspicuously large in the right-hand column of page 73 with its Maya ciphers:

1
19
0
0.

From this column proceed two rows of figures, one of which has the difference 65; that is, a fourth of 260, a two-hundred-and-sixteenth of 14,040; the other increases by 54, the triple of 18, which is the two-hundred-and-sixtieth part of 14,040.

14,040 is also concealed elsewhere in the same manuscript. Thus on page 24, at the bottom of the left-hand column, there are three dates, of which the right-hand one is 11,960 days distant from the middle one, and the middle one 2,200 days from the left-hand one. Therefore the two extreme dates represent together 14,160 days, or, bearing in mind the intervals of days belonging to them, I Ahau and IV Ahau, 14,040 days from each other.

It is well known that pages 46 to 50 are closely connected with this passage. It need not seem surprising, therefore, that 14,040 can here, too, be obtained by computation, as I may hereafter be able to demonstrate. Thus the ends of the periods recorded in the first serpent also have the difference 14,040 (see my treatise Zur Entzifferung der Mayahandschriften, II). Hence the period of 14,040 days must have been of the utmost importance before the introduction of the yeār of 365 days, and was doubtless designated by a word, which we unfortunately do not know.

It was presently discovered that the solar year actually consists of 365 days, and an attempt was at once made to harmonize it with the tonalamatl of 260 days. The well-known katun=73 tonalamatls or 52 solar years=18,980 days was thus obtained, a period after the expiration of which each day date again recurs in the same place in the year. In accordance with this, the katun seems to be expressed by a glyph which contains a certain day (Imix) as its principal part, but as a superior affix a figure which expresses a tieing together. I have hazarded this conjecture in the Zeitschrift für Ethnologie, 1891, pages 152 and 153. The selection of Imix for this sign must therefore have occurred at a time when Imix was accounted the first of the 20 days.

The creation of time periods did not cease here. The movement of the most conspicuous planet, Venus, was also taken into consideration, and it was found that its apparent revolution embraced a period of 584 days. This had now to be harmonized with the newly discovered solar year, which could be easily done: 5×584=8×365=2,920. We find this latter number clearly indicated as the basis of the calculations on page 24, as well as on pages 46 to 50 of the Dresden codex. Then the Aztecs after every 8 solar years celebrated the greatest splendor of Venus, when Venus "smokes" (see Anales del Museo Nacional de Mexico, volume 2, 1882, page 342). As we saw above, the Mayas proceeded from 4,680 to its triple, 14,040, in order to obtain greater divisibility; so, too, they advanced from 2,920 to its triple, 8,760, which is divisible by 3, 6, and 12. This is the ahau of 24 years of 365 days each, so often mentioned, virtually the principal period in Maya history. Here we are indebted to Cyrus Thomas, who, by his full investigation of the subject, laid the foundation for further research (see A Study of the Manuscript Troano, pages 28 to 58).

Both the period of 2,920 and that of 8,760 days still had a defect. They did not harmonize with the tonalamatl of 260 days. The double katun of 2×18,980=37,960 days, or 104 solar years, was therefore introduced, as we see it especially in the Dresden manuscript, pages 46 to 50, where three such periods are computed, in each of which 260, 365, and 584 are factors.

The next task was to find a period in which both the ahau and the katun, as well as the revolution of Venus, that is, 8,760, 18,980, and 584, are contained. Accordingly, the triple of the period just mentioned, the double katun, was employed, which resulted in the ahau katun of 113,880 days=6 katuns=13 ahaus=195 Venus years=312 solar years=438 tonalamatls.

But the utmost perfection was attained in the period of 12 ahau katuns=1,366,560 days, divisible not merely by tonalamatl=260, solar year=365, Venus year=584, ahau=8,760, and katun=18,980 days, but also by 9, all important in Maya mythology, and hence by the old year of 360 days. This important period with the figures

9
9
16
0
0

occupies the first place among the large numbers in the Dresden codex on page 24, as 14,040 occupies the last place on page 73. The other large numbers in the Dresden codex, except those in the five serpents, are in strikingly close proximity to this high number, just like the dates on the stelæ at Copan. Thus we shall soon be able to determine all these numbers according to our computation of time, which will be a step of the greatest importance. Indeed, I believe that to all intents and purposes this step has already been taken in the ingenious exposition of Cyrus Thomas (see A Study of the Manuscript Troano, 1882, pages 187 to 197).

The Aztecs do not seem to have been familiar with the great periods of 12×312 years just mentioned. According to the Anales del Museo Nacional de Mexico, volume 2, 1882, pages 347 and 349, they had a cycle of 10×104 years and the triple of it, 10×312 years; therefore, here, too, multiples of 8 years were always employed.

Apparently, side by side with this interconnected series of periods, there is another quite distinct one. It was noted that Mercury performed its apparent revolution around the sun in 115 days, and to reconcile this 115 with the tonalamatl of 260 days, is the task of the number adverted to, 11,960=104×115=46×260. The two dates on page 24 of the Dresden codex at the left below, I Ahau, 18, third month, and I Ahau, 18, seventeenth month, are this distance apart, and this interval also forms the basis of the wonderful series on pages 51 to 58. Thus, that which was only represented in brief on page 24 is carried out more fully on pages 46 to 50, and also on pages 51 to 58.

Yet this 11,960 is most curiously connected with the numbers before discussed. The double katun (37,960) has the same relation to 11,960 that the solar year (365) has to the Mercury year (115), for both are multiples of 104, and have the ratio, therefore, of 73 to 23. Thus the two numbers are distant from one another by just 100 (a round number to us, but not to the Mayas) tonalamatls. Further, if we subtract from the double katun twice 11,960 (=23,920), the result is nothing more nor less than the remarkable 14,040.

The apparent revolution of Mars, indeed, which, strange to say, comprises just 3 tonalamatls=780 days, seems to be the basis of the Dresden series, on pages 43 to 44 and 59, and that remarkable 14,040 is equal to 18 of these Mars years, while the 113,880 equals 146 of them. Here we must not, however, feel too secure. Jupiter and Saturn seem never to have been included in the computation at all, with their apparent revolutions of 397 and 380 days, respectively (between two superior conjunctions), which closely approximate the solar year.

Not until long after all I have thus far explained became clear to me did I recognize that the Mayas had also very naturally turned their attention to the period of the moon's revolution. The wonderful series on pages 51 to 58 of the Dresden codex, already mentioned, only arrives at the number 11,960; or, when we take into consideration that there are three day signs with every number, the highest number there is in reality only 11,958. This number, however, is arrived at because periods of 177, 148, and 178 days follow each other strangely mixed; indeed, the 177 occurs fifty-four times, the 148 nine times, the 178 six times. But now

$$\begin{aligned} 177&=3\times29+3\times30\\ 148&=2\times29+3\times30\\ 178&=3\times29+3\times30+1 \end{aligned}$$

The entire series, therefore, is constructed thus:

$$\begin{array}{rcl} 54\times177=162\times29+162\times30 & = & 9{,}558\\ 9\times148=\ 18\times29+\ 27\times30 & = & 1{,}332\\ 6\times178=\ 18\times29+\ 18\times30+6 & = & 1{,}068\\ \hline 198\times29+207\times30+6 & = & 11{,}958 \end{array}$$

There is, I think, nothing more natural here than to see alternate months of 29 and 30 days, just as they alternated with the Greeks.

The 198 months of the one kind and the 207 of the other together make 405 months. But if we divide 11,958 by this 405, we find the length of the moon's revolution as observed by the Mayas to be 29.526 days.

But the actual synodical revolution of the moon is 29.53 days. The Mayas, therefore, made it too short by only four-thousandths of a day; surely an amazing achievement. If they had employed merely the period of 177 days, the month would only have amounted to 29.5 days; by the addition of the nine periods of 148 days, only to 29.512. The six periods of 178 days, containing the intercalary days, were thus quite essential in order to reach this singularly accurate result.

Thus we see combined on pages 46 to 50 of the Dresden codex the revolutions of the sun and Venus and on pages 51 to 58 those of the moon and mercury, that is, the revolutions of the four heavenly bodies most conspicuous in their movements combined in pairs; on the one hand, the two slower ones, on the other, the two of swifter motion, but of comparatively less brilliancy. Page 59 may refer to the revolution of Mars alone, while page 60, the final page of this front side of Codex Vaticanus B, seems lastly, but in a way as yet unexplained, to condense, as it were, the entire contents of this section. Perhaps above we here see the contest between these heavenly bodies, and below the victory of the one over the other.

THE MAYA GLYPHS

BY

E. FÖRSTEMANN

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FIRST PAPER[a]

It is well for the traveler occasionally to cast a backward glance over the road upon which he is journeying, and the same holds good of the path along which science is advancing. From the vantage ground of that which has already been attained we can see more clearly what should be the next step and what is still to be attained. The wonderful hieroglyphs which occur on the stone monuments and in the ancient manuscripts of Guatemala, Chiapas, and Yucatan, which but a few decades ago were a perfect enigma, are to-day one after another becoming intelligible and call all the more for such a retrospective view because in them pre-Columbian America attained its highest state of culture.

The birth year of the decipherment of these glyphs was 1863. In that year the Abbé Brasseur de Bourbourg discovered at Madrid the manuscript of the Relacion de las cosas de Yucatan by Diego de Landa (bishop of Merida in Yucatan from 1573 to 1579), which he published in 1864. In this manuscript were found the signs of the numerals from 1 to 19, the twenty day signs of the 20-day period, and the eighteen signs of the periods of this kind which make up the year. All these signs, apart from numerous variants, were actually met with again on the inscriptions and in the manuscripts, so that by the discovery of this manuscript the corner stone was laid, and building could proceed. I do not wish further to discuss these glyphs here nor to copy them since they are the undisputed possession of science and have been reproduced in many places, for example, in my Erläuterungen, published in 1886. No one will misconstrue my silence with regard to the so-called alphabet of Diego de Landa.

The next addition to this material was made in 1876 by Léon de Rosny in his Essai sur le déchiffrement de l'écriture hiératique de l'Amérique centrale, in which we find interpreted the well-known signs which unquestionably denote the four cardinal points. This discovery was made simultaneously in America by Cyrus Thomas.

In two of these four signs and in one of the eighteen signs of the 20-day periods was found the symbol for the sun, as if it were a matter of course, as Léon de Rosny himself acknowledged. The word for sun, kin, however, also denotes day, and it was proved, though somewhat later, that this sign is also used with the latter meaning.

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[a] Die Mayahieroglyphen, Globus, 1894, v. 60, n. 5, pp. 78–80.

In the preface to my first edition of the Dresden manuscript (1880) I did not take occasion to express any opinion in regard to the meaning of the signs, and yet that very edition was a great stimulus to me and to others for further research. It was especially my acquaintance and subsequent collaboration (in person and by letter) with my friend Doctor Schellhas, of Berlin, that proved a source of manifold light to us both. Thus we soon found ourselves studying the sign in which Schellhas recognized the moon (and at the same time M. Pousse in the publications of the Société Américaine), the period of 20 days. Both interpretations were correct. For, either the moon, being considered dead during the period of new moon, was assumed to be alive only 20 days at a time, or the moon was conceived of as man, for in the Maya language " vinak " means both 20 and, from the number of fingers and toes, man. I was also on the point of finding a second symbol for 20 (Erläuterungen, page 12) which was positively recognized as such by Doctor Seler in 1887.

It was a source of special satisfaction to me that in April, 1885, I was able to determine the sign for zero and soon afterward to discover the way in which the Mayas expressed the higher numbers, so that they can now be read from zero up to millions. Upon this discovery is based the largest part of my later researches.

Closely connected with this discovery was that of the glyph for the planet Venus, of the certainty of which we are constantly receiving fresh proof.

Having already communicated all these signs in the year 1886, in my Erläuterungen, I can omit them here to save space, only remarking that the attempt I made in that article to determine the signs for the rest of the planets seems to me now, as it did then, very uncertain.

Two papers of Doctor Schellhas should have special mention here, Die Mayahandschrift der Königlichen Bibliothek zu Dresden (1886, in the Berlin Zeitschrift für Ethnologie, page 12) and Die Göttergestalten der Mayahandschriften (1892, in the same journal, page 101). As it is not necessary to speak here of the merits of these writings except so far as they are connected with the determination of glyphs, I merely mention that in these articles we find, first, four little signs interpreted beyond a doubt, which often appear as prefixes to other glyphs. The office of these prefixes is to place the glyphs in their respective relation to the four several cardinal points, thus making it unnecessary to use the actual signs of these mentioned above. But of much more importance is the second discovery due to the efforts of Doctor Schellhas, viz, that about twenty different glyphs are recognized as the designations of twenty different deities.

Those occurring most frequently were determined with absolute certainty, the others with more or less probability. Schellhas, however, has not applied any of the traditional names to these gods, but has simply designated them provisionally by letters, and in doing so he is right, for the Olympus of the Mayas and Aztecs has so many intersecting paths and byways that it is almost unavoidable not to go astray, especially since it is difficult to discriminate between the universal and the local deities.

I am now compelled to speak of myself. Since the appearance of my Erläuterungen (1886), I have published eight different treatises on the Maya science:

1. Three essays entitled Zur Entzifferung der Mayahandschriften, 1887, 1891, 1892, in pamphlet form, which were at first only intended for private circulation. These will soon be followed by a fourth, which is to be presented to the Congress of Americanists at Stockholm.

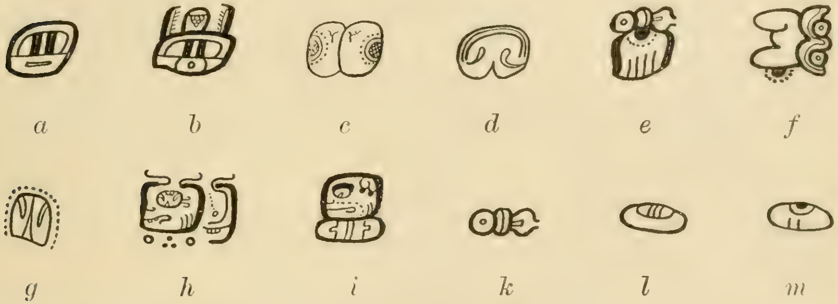

Fig. 110. Glyphs from the Dresden codex.

2. Zur Maya-Chronologie (1891) in the Zeitschrift für Ethnologie.

3. The preface to my second edition of the Dresden manuscript (1892).

4. Three articles in Globus, volume 63, number 2, and volume 65, numbers 1 and 15: Die Zeitperioden der Mayas, Zum mittelamerikanischen Kalender, and Die Plejaden bei den Mayas.

As this material is so widely scattered, and as I still wish to speak of some signs not discussed in the above-mentioned articles, I will here give the form of a few glyphs which have been recently determined, omitting, for the sake of brevity, those which are still doubtful. As I have proceeded from the mathematic standpoint, these glyphs chiefly concern certain periods of time.

The first (*a*, figure 110) is the sign for the year of 360 days, long since recognized as the sign of the 20-day period Pax. As such, however, it generally appears with three balls added below, which, I am inclined to consider as a representation of the most conspicuous point in the celestial equator, the three stars in the belt of Orion, with which the sun is in conjunction in Pax.

The second (*b*) represents the period of 20 years, 20×360=7,200 days. Both these signs (with variants) are common to both manuscripts and inscriptions. From the latter I give here for the first time two characters (in the form in which they occur on the Cross of Palenque): Number 3 (*c*), the period of 20×7,200=144,000 days, and number 4 (*d*), the period of 20 days. To these I add from the manuscripts number 5 (*e*), the period of 52×365=18,980 days, after which each day recurs in the same place in the year. Hence this glyph is the day sign Imix, which is usually considered the first of the day signs, with the so-called rattlesnake ornament which here and in other cases, as I will incidentally remark, signifies a tying together, a union.

I will here pass over in silence the signs for the periods of 260, 2,920 (8×365), and 8,760 (24×365) days, which I think I have discovered, but am not yet sufficiently certain to publish a statement regarding them.

It is important to ascertain whether other stars and constellations besides the sun, moon, and Venus have not their special symbols. I have already attempted in this journal to show that the Pleiades are probably designated by the Moan head and its representative signs. I think Mercury may be recognized in a Venus sign before which a human figure with head downward, *f*, is drawn (Dresden codex, pages 57 and 58). Doctor Seler has already shown (1887) that in all probability the firmament is commonly denoted by the day sign Akbal (night), *g*, with a circle of dots around it.

With the chronologic and astronomic signs the ideas of beginning and end are closely connected, and for both these ideas I think I have found the glyph.

These in the main are two heads, the first of which, *h*, has for an eye the day sign Akbal, just mentioned, with which, according to the most recent discovery, the 20-day periods may begin. Below are the familiar footprints denoting a movement forward. The second sign, *i*, agrees with Xul, the seventh of these periods, and Xul really means the end. From pages 61, 62, and 70 of the Dresden manuscript in particular, but also from other passages, we learn how these two signs are contrasted with one another.

Of the small signs which appear as prefixes, suffixes, etc., to the larger characters I have already mentioned the four relating to the cardinal points and the rattlesnake ornament denoting a tying together, *k*. In contrast to the latter is the sign of division, *l* or *m*, denoting the obsidian knife, which was recognized by Doctor Seler in 1887. I have already tried to prove in this journal that the superior affix, occurring so frequently, and common to both manuscripts and inscriptions, which consists of the day signs Ben and Ik, probably denotes single lunar months of 28 and 29 days, and I expect still further to confirm this view.

The representations of particular objects in Maya literature are not in question here, and they will be considered only in so far as they appear as actual glyphs in the series with the rest. To this class, for example, belong the four animal figures which often occur in close proximity—a portion of a mammal, a bird's head, a lizard, and a fish—possibly designating various offerings.

An important glyph is the hand, which so often occurs in both manuscripts and inscriptions. It appears sometimes in the act of grasping, with the thumb bent forward, and sometimes as pointing, with the thumb close to the hand. The first really appears to denote a tying together like the ornament mentioned above, to which I intend to refer in my forthcoming essay Zur Entzifferung der Mayahandschriften, IV; the second can hardly denote anything but a movement in space (as it does on our finger posts) or a lapse of time, as in the many examples in the Dresden codex, pages 46 to 50.

This is practically all the treasure that has thus far been secured from the writings of the Mayas. It probably comprises the most important ones, but by no means the majority of the signs. Let us hope that in the near future these glyphic treasures may increase, though hitherto there has been a lack of laborers in this field.

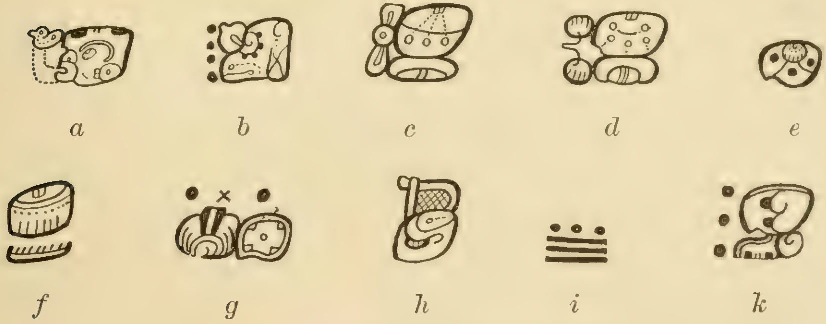

FIG. 111. Glyphs from the Dresden codex.

SECOND PAPER[a]

In volume 66, number 5, pages 78 to 80, of this journal, under the same title, I published a short article which was intended to show in hasty review what progress had been made in the interpretation of these signs. Two or three years have passed since then, and now I have been unexpectedly called upon to summarize the progress which has been made in this work during the time which has elapsed, particularly what I believe has been accomplished by myself. I shall be obliged to speak more of myself than is usually my custom.

(1) *a*, figure 111. All that can be said concerning this figure is only partially new, for Schellhas has proved in his fundamental treatise

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[a] Die Mayahieroglyphen, Zweiter Artikel, Globus, 1897, v. 71, n. 5, pp. 78 to 81.

Die Göttergestalten der Mayahandschriften that it is the glyph of the god C, and that it is a star, the polar star, in fact. I have recognized this meaning from the first, but I would prefer to call it the polar constellation (Ursa Minor). Now, it happened while I was recently examining the remarkable tonalamatl in the Dresden codex, pages 4a to 10a, that I discovered in it a peculiar displacement of time. As a fixed point of departure I found groups 14 and 15, the former representing the tiger, the latter the vulture, with an interval of 2 days between them. There is just the same interval between the Aztec day Ocelotl (jaguar) and Cozcaquauhtli (vulture). This was a very gratifying discovery, because it revealed a new point of contact between the Aztec and Maya systems. Now if we reckon back from this passage 23 days to group 5 (page 5) we find god C with his glyph, and are forced, on account of the distance of the days, to place this group with the Maya day Chuen or Aztec Ozomatli (monkey). Finding this to be the case, the question at once flashed through my mind, Does not this glyph in the main represent a monkey's skull? Does it not present an indication of the lateral nasal aperture of the American monkey? The Aztec day sign Ozomatli has a certain, though distant, resemblance to this sign. But how are the monkey and Ursa Minor to be connected? I fully believe that the former is more appropriate here than the latter. The polar star is the last star in the tail, but the monkey, after the fashion of its kind, clings with its tail to a fixed point, around which it swings the rest of its body. But I already hear the opponents of this conception, and pass on to a second glyph.

(2) *b*. After I had printed my treatise, Zur Entzifferung der Mayahandschriften, V, in 1895, I next undertook the task of examining the 28 groups belonging together on pages 71 to 73 of the Dresden codex, each consisting of three glyphs, and found that they had no connection with the adjacent numbers, but represented a ritual year of 364 days, divided into 28×13 days. Then I forthwith noticed that groups 4, 11, 18, and 25 contained the glyph given above, in several variants, at intervals of 91 days. Hence nothing was more natural than to see in this sign *b* a Bacab, a deity of the wind and the cardinal points, since we have long known that each period of 91 days is under the dominion of a particular Bacab. This was fully confirmed by a comparison of the 69 groups of glyphs on pages 51 to 58, in which I likewise recognized weeks of 13 days. Although the groups are very often destroyed, especially in the first half, the sign appeared again in groups 39, 46, 53, and 60, and I attached to this fact various observations concerning repetitions after every seven groups. In a third series of glyphs on page 72 at the top, I again found the Bacab in the eighth member. The number 4 fre-

quently occurring before this sign proves abundantly that one of the four Bacabs is intended.

(3) *c*. On page 6 of my treatise just referred to in connection with the preceding glyph I mentioned the discovery of the character given here as *c* in the eighth and sixteenth of the 28 groups. I had reasons for making the ritual year reconstructed there begin with the spring equinox, and the consequent positions indicated for the two signs were June and September; that is, the beginning and the end of the rainy season. It seems to me to represent a cloud from which three streams of water are falling upon the earth. The obsidian knife added below may here indicate, as it often does, a division, or period, of time. On page 36c of the Dreden codex we see the figure of a god standing in the water and looking upward, upon whom similarly drawn raindrops are falling from a rain cloud, clearly distinguishable as such.

(4) *d*. This sign occurs very frequently, with different variants, in the manuscript, but probably never in the inscriptions. In the treatise mentioned in connection with the preceding glyph, I have already cursorily pointed out that a somewhat similar sign seemed at least to approximate the idea of the week of 13 days, and I would like to speak more in detail concerning it. I will first remark that even in the manuscripts I can point out this glyph only in those sections which contain tonalamatls. It is therefore missing in the entire second part of the Dresden codex, from page 46 onward; also in the first part from page 25 to 28, and likewise in the Troano codex on those pages which correspond to the last-named pages, that is, 23 to 20, etc. It occurs more frequently with day XIII than with any other week day, as in the Dresden codex, pages 11c and 41a, and in the Troano codex, pages 15c, 16a, 30c to 29c and 31*b. Furthermore, it appears after the period of 13 days, as in Troano codex, page 16c, and after 6+7 days in the Dresden codex at least, page 23c. But it is used especially at the close of the divisions of the tonalamatl, as after 2×13=26 days in the Dresden codex, page 14c, in the Troano codex, page 31*b, and in the Cortesian codex, page 29b; after 4×13=52 days in the Dresden codex, pages 11c, 22b; after 5×13=65 days in the Dresden codex, page 16b, and in the Troano codex, page 7*c. Indeed, in the Troano codex, pages 30c to 29c, it appears to be added to each of the five divisions of 13 days each, which, however, is uncertain on account of the careless drawing. And in the Troano codex, pages 8c to 7c, where the 52 days are divided into five sections (4×10+12) it is likewise employed five times. Finally, I call attention to it in the Dresden codex, page 30b, where it closes 10×13=130 days. I think these examples are sufficient to warrant me in ascribing to this glyph the function of denoting the week of 13 days or the close of such a week having the day XIII.

I have still a word to say concerning the remarkable tonalamatl in the Dresden codex, pages 4a to 10a, where twenty of the first 52 days are rendered prominent by pictures and groups of glyphs. Here this character appears in the groups 1, 5, 11, and 16; that is, with the second, fifteenth, twenty-ninth, and forty-fourth days of the 260-day period. That might mean that a new 13-day period had begun meantime, though not exactly with these days. The character (*e*) appears besides, in a somewhat different position, it is true, in the fourteenth group (the thirty-eighth day); that is, after the expiration of 13 groups. It is also remarkable that this day, as we saw above, is the day Ix of the Mayas, Ocelotl (tiger) of the Aztec, and this day, if we begin the series as usual with Imix, stands in the fourteenth place at the beginning of a new week. Indeed, it should be observed that this character, *e*, resembles no day glyph of the Mayas more closely than Ix; and here there is possibly a forgotten original connection. The sign Ix, hitherto entirely unexplained, almost suggests the idea that in it two lines radiate from an Imix, between which three dots are placed; now two lines and three dots form the number sign 13 $(2\times5+3)$. However, I do not wish to assert any conclusion.

(5) This glyph, *f*, is the familiar sign for the thirteenth 20-day period of the year; that is, the so-called month Mac. But I believe I was right when I assigned a second meaning to this sign in my treatise Zur Entzifferung der Mayahandschriften, IV. I examined there page 24 of the Dresden codex, the object of which is to link together the solar year, the Venus year, and the tonalamatl, and incidentally the lunar month and the Mercury year as well. Here I found, first of all, in the series of glyphs on the left, several signs relating to the solar and Venus years, and then, in the eleventh and twelfth places, this glyph wherein I was inclined to see the tonalamatl, for which, strange to say, no sign has as yet been discovered. This sign is repeated, which may possibly denote the recurring tonalamatl. How does the period Mac happen to have this meaning? The chief reason is that 260 days of the year have really elapsed at the end of the period Mac; but the form of this glyph also furnishes a certain justification for connecting it with this meaning, for in reality it is a variant of the familiar Imix which stands at the head of the series of days. This sign has a suffix which originally seems to have indicated a bird's feather and possibly still occurs in the manuscripts with this meaning. A bird's feather, however, is one of the most fitting symbols supplied by nature to designate the plural. Thus, in my opinion, this glyph denotes Imix, in that the day constantly returns until it regains its original position in the week.

One place where I think I find a sign for the tonalamatl is in columns A and B of the Cross of Palenque. After the well-known superscription we find there, always combined with the pictures of the gods belonging to them, the signs of the periods of 144,000, 7,200, 360, and 20 days; then, the single day counted off on the subjoined fingers; after that, the principal day Ahau in the eighth place, with the picture of god D, to whom it is dedicated, which is often the case, as for instance, in the Dresden codex, page 9a, on the left.

Should we not expect to find the tonalamatl among the succeeding glyphs on pages 9 to 12? I commend this passage to the student for further consideration. In addition, the moon's revolution and the point at which Maya chronology begins are represented.

(6) First of all, at the top is the sign of a number, *q*, which I will leave for the present undetermined. Below it are two glyphs, the probably phallic yax ("vigor", "strength") and the kin ("sun") signs. We are reminded of the month Yaxkin, which corresponds approximately to our November, and consequently can not take its name from the power of the sun, but rather from a particular deity or sacrifice. This, not the month, was thought of in connection with the sign, as is demonstrated by the following six passages of the Dresden manuscript where it occurs.

On page 18a is a woman holding the glyph (yax placed above kin) in her hand, like an offered sacrifice. The glyphs above the picture are destroyed, but probably contained the same sign once more. On page 18c a woman carries this figure on her back. Such a sign usually indicates a particular deity. The glyphs found above repeat the sign. On page 19c is the same representation as on the preceding page. The woman has a hair ornament of flowers. On page 27b the sign is placed on a vessel, a kind of bowl. This means food offered as a sacrifice. The two remaining examples, on pages 46b on the right and 50c on the right, are placed under different glyphs, most probably denoting gods, at the beginning and end of the great representation which treats of the period of 2,920 days, in which five apparent Venus years (5×584) coincide with 8 solar years. Each time the adjacent sign is the Moan, in which I have surmised the end of the year and the Pleiades.

Four examples, in which this sign occurs in Codex Troano-Cortesianus (Cortesian codex, page 35b, and Troano codex, pages 21a, 22*a, and 14*b), owing to the inexactness prevailing in this manuscript, would demand a long discussion without advancing the matter.

We must now observe the number sign which stands above the glyphs yax and kin, *q*. For this purpose I will call attention to the example cited above from the Dresden codex, page 27b. The four pages 25 to 28 treat of the last day of the four kinds of years and of the first day of the succeeding years, but still offer a great many enigmas. The numerals scattered through the different parts of the pages are especially to be counted among these riddles. I will here show the positions of these numerals.

Pages	25	26	27	28
a	9 7	7 16	11 5	6 6
b	8 9	13	2	13
c		7	X	6
d	19	9	16	15

I would like to place the 9 of page 25b in page 25c, for it would produce greater uniformity.

Numbers 9, 7, 11, and 6 of division a are connected with a sign in which there is an ik (" wind " or " fire ") ; the other four numbers belong to a glyph of which the chief factor is the moon.

In division b there belongs to each number a group formed of a chuen repeated three times, that wonderful sign, the interpretation of which would be so great a step in advance.

In c each number refers to a vessel containing sacrificial gifts.

Lastly, in d, on page 25, the number appears above a large kettle, which seems intended to be used for cooking the sacrificial flesh (the slaughtered fowl near it?), while on pages 26 to 27 it is also joined with offerings, but most directly in each case with the yet unexplained sign *h*, whose chief factor is the glyph of the moon.

All the numbers, of which there are 20, seem to have been arbitrarily chosen; at least, with the greatest pains I have not yet succeeded in discovering the law that governs them. The fact that the sum of the first numbers in division a is 33 and that of the second numbers 34 did not even help me.

The pages deal with the possible 52 years of a katun period. Now, it is striking that the sum of the five numbers on page 25 is exactly 52, and uncertainty as to whether this result is intentional or not vanishes at once when we see that also on page 26 the sum is 52. With this fact in mind we proceed to page 27 and find here 11+5+2+16=34. If here, too, 52 is the result intended, as we must certainly wish it to be, then the hitherto unknown numeral must be an 18, an abbreviation for the awkward form *i*, standing literally for duodeviginti (20 — 2) in the Maya writing 18.

Finally, on page 28, the sum of the numbers is only 46, and this leads us to surmise that somewhere there should have been written 6 units more, in division a.

Thus we are compelled to recognize in the number 18 a number pertaining to a deity, somewhat as 13 belongs to god S and 11 to god F. We should find more examples if the remains of Maya literature handed down to us were more voluminous; 18, however, is also the number of the 20-day periods which make the year.

But which god belongs to the number? I think he is to be found close beside this glyph in the Dresden codex, page 27b. It is the "old god", D, that moon and birth god, who, perhaps, as Izamna, was supreme among the Mayas, and as Tonacatecutli prominent among the Aztecs and as Hunahpu among the Cakchikels. But why is the number never added to his picture, as far as we have seen, but only to the sacrifices offered to him? His glyphs already had a determinative sufficiently plain, the day sign Ahau, which denotes the most important of all days and, as is well known, the beginning of all Maya chronology. The other chief gods, A, B, and C, likewise require no numbers to determine them more clearly.

Where duodeviginti occurs one might expect undeviginti also. I present here for consideration, without being able to prove anything, the sign $\overset{\times}{\underset{\times}{\cdot}}$ found in the Dresden codex, page 3, at the top on the right. In this passage it is near the sign of the serpent deity, H, which corresponds to the day Chicchan.

But I would say by way of caution that the sign $\dot{\mathrm{X}}$ which in the Dresden codex, page 58, lower half, stands before the glyph for 7,200 days, must not be interpreted in the same way as those last discussed, for the cross here only signifies that the dot does not belong in this place, but to the glyph above, where there was no room for it. A comparison with the last glyph but one of the first column, Dresden codex, page 24, confirms this observation.

(7) *k*. It is advisable in attempts at deciphering to turn our attention to the glyphs which occur most frequently, as the difference of their environment may sometimes give us the right clue. It will certainly be of value to consider all the details of their occurrence, even if an actual interpretation is not finally reached. To these frequently occurring signs belongs the one given here, *k*, which we will follow through the Dresden codex, which, owing to its careful execution, gives more promise of success than the inexact Codex Troano-Cortesianus.

This glyph occurs on page 3, near the tonalamatl combined with the picture of a human sacrifice, beside the sign of the god B, the most frequent in the manuscript. The great tonalamatl, pages 4a to 10a, shows the sign not less than five times, in the sixth, fifteenth, twenty-third, thirty-third, and forty-eighth of the 52 days, with the gods B, C, H, K, and E, successively in the sixth, fourth, fifth, sixth, and fifth places of each of the six glyphs. On page 5c we find it placed with the god D, page 6b with E, 7c with H, 10b with B, 11a with H, 11b with L, 11c with E, 12a with K, 13b with C, 14c with D, 17b with an undetermined female deity, likewise 19b and 20c, 21b with A, 21c with D, 22b perhaps with I, 23c with D and with three female personages. Here, in every case, the glyph is in a tonalamatl. It is wholly lacking on the astronomic page 24, notwithstanding that it contains 40 glyphs. Of the four calendric pages, 25 to 28, containing no tonalamatl, only page 26 contains this sign, where it stands in the middle row between the glyphs of E and U. In the large section devoted to god B, which contains so many tonalamatls, it is missing, strange to say, on all the pages from 29 to 37 and then appears again three times, on 38b, 39a, and 40a, each time with the picture of this god. The last five pages of the first part of the manuscript, 41 to 45, again entirely lack this character, although gods and tonalamatls abound in them.

In the second division of the Dresden codex, pages 46 to 74, the ritual year becomes of secondary importance and the astronomic year becomes more prominent. Accordingly, we rarely find this glyph here. On pages 46 to 50, on which the Venus and solar years are made to agree, it is found only once, on page 48 at the top on the right, directly in the center of the 20-membered period of 2,920 days, beside its tenth member. In the large section pages 51 to 60 this sign is wholly lacking. We first find it again on page 65, in the lower half. Here the period treated of is the ritual year of 364 days, the actual year 9 Kan, it would seem, the sign of which is on the left of the glyph under discussion. However, 9 Kan is the middle point of the great world epoch beginning with the year 9 Ix. At the end of the same section, 91 days, or a quarter of a year later, lower half of page 69, this glyph appears again. But what it may mean above on the same page, likewise at the end of 91 days, where it is connected with the ordinary sign of the owl (death bird) we must leave quite undecided. This section, which I have discussed more fully in the Zeitschrift für Ethnologie, 1891, presents special difficulties. Finally, in the last example offered by our manuscript, page 73, in the middle, our glyph stands directly under the sign of the death god A in the twentieth member of a series, each member of which denotes 13 days; that is, after 13×20 days, just a tonalamatl from the beginning of the year.

So much we know concerning the different circumstances under which this glyph appears in the Dresden codex, and yet we have hardly formed an opinion concerning its meaning, to find which must be our chief object. We can only make the negative assertion that it can not possibly denote a particular deity, a particular sacrifice, or a particular period. Almost the only other supposition is that it must denote a particular ceremony. Was it, perhaps, the sprinkling three times with the aspergill? Or are we to think of the three steps which the priests had to take? The chief part of the glyph is the day sign Oc, which, to be sure, means the foot, therefore, perhaps, also a step. Some one once suggested a "third order of priests", of which, however, nothing has ever been known. In any event, this communication will supply acceptable material for the final solution of the question.

THE CENTRAL AMERICAN CALENDAR

BY

E. FÖRSTEMANN

THE CENTRAL AMERICAN CALENDAR[a]

By E. Förstemann

Dr Daniel G. Brinton, professor of American archeology and philology in the University of Pennsylvania, besides making many investigations in other directions, has since the year 1869 furnished numerous valuable contributions to his special branch of the science. Among these is his recent book The Native Calendar of Central America and Mexico (Philadelphia, 1893). This calendar is in every essential point identical in the territory of the Nahuas in the valley of Mexico and in Guatemala and Nicaragua, among the Mayas of Yucatan and their kindred in Chiapas and the surrounding region, hence among tribes which are linguistically unrelated. The chief feature of this book of Brinton's is an investigation of the names which in very different ways have been given by these peoples to the 20 single days and to the 18-day and 20-day periods of the year, erroneously called months. Certainly, no one is able to carry out a linguistic investigation of this kind more thoroughly than Doctor Brinton, since he has access to numerous manuscript vocabularies of the language, some of them in the library of the American Philosophical Society and others in his own possession. With the aid of these, he seeks in this book to determine the fundamental meaning of the different words by which a certain day is designated; with the so-called months no such agreement is found. This meaning can always be found in the living forms of transmitted speech in Nahuatl, while in Maya, Tzental, Kiche, Cakchikel, and in the Zapotec these words mostly have an archaic character, which points to a greater antiquity of the calendar than it has in Nahuatl and naturally leaves room for much doubt. Now, it seems as if this investigation might be materially aided by the study of the appertaining glyphs, but Doctor Brinton does not admit this, for, according to his view, the glyphs have nothing whatever to do with the meaning of the word, but only with the sound, as if we were to attempt to represent the English pronoun "I" by an eye or the word "matron" by a mat and a person running. I do not deny such a process, but accept it in the cases where an old day name has vanished from the living language; thus, for example, the first day is called in Nahuatl Cipactli, undoubtedly a kind of fish. Imix, or Imox, in the Maya language must have had the same meaning, although the glyph seems to me to indicate the female breast ("im", breast, and "ix", feminine suffix). Does it, however, necessarily follow that the meaning was always so forgotten? The Maya glyphs for Chicchan, Cimi, Ezanab, for example, indicate clearly enough the serpent's skin, the death's-head, and the stone lance point. However, without this aid of the glyphs, Brinton has discovered much that is new and important, and it is only in consequence of the brief space allotted me that I am obliged to deny myself the pleasure of discussing it more in detail. Nor can I touch upon his subtle observations concerning the so-called month names. But let me remark here that a study of the glyphs would lead to and establish many things. For example, that the sixth month, Xul, actually means "end" is directly proved by the instances in which its glyph stands at the end of long periods of time, as it does seven times among the calendar dates discovered by me in the Dresden manuscript, page 61 to the bottom of page 62, and in many other places. Moreover, it is remarkable that there have been no names handed down to us for the actual lunar months, which must have been very well known to these tribes, as I have shown in volume 63, number 2, of this journal. Still I think that I have now found at least the glyphs for these months in the twelve or more different signs, common to both the manuscripts and the inscriptions, having affixed above them a combination of the day signs Ben and Ik (*a*, figure 112), Ben being separated from the second Ik following it by 29

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[a] Zum mittelamerikanishchen Kalender, Globus, 1894, v. 65, p. 20.

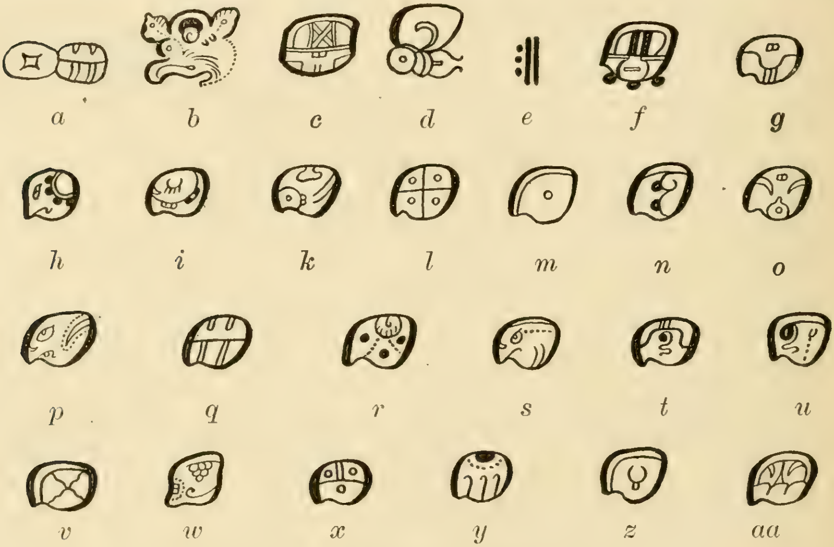

FIG. 112. Day signs from the Maya codices.

days. In the practical calendar the inconvenient number 29 could not well be used, but only the convenient divisor 28 (28×13=364). On pages 6 and 7 Brinton also touches on this division of the year, on which, I am sorry to say, I must not permit myself here to dwell. I am also forced to leave the last chapters of his book, "The symbolism of the day names" and "General symbolic significance of the calendar", without any discussion whatever, especially as I am unable to follow the author in his lofty flights. (For the twenty day glyphs see *g* to *aa*, figure 112.)

THE PLEIADES AMONG THE MAYAS

BY

E. FÖRSTEMANN

THE PLEIADES AMONG THE MAYAS[a]

By E. Förstemann

In volume 64, number 22, of this journal, the editor published an article, Die Plejaden im Mythus und in ihrer Beziehung zum Jahresbeginn und Landbau, in which he sets forth the importance of this constellation in the life of widely different peoples. This article inspired me to write down some thoughts which have long been in my mind concerning the Maya tribes of Central America; that is, concerning the acme of all American civilization.

Peter Martyr, in his book entitled " De nuper sub D. Carolo repertis insulis ", Basileæ, 1521, page 34, says of the tribes living in and about Mexico: Annum ab occasu eliaco vergiliarum incipiunt et mensibus claudunt lunaribus. This refers to a new year's day which comes in May, as is recorded of the Chiapanecs in Chiapas, differing widely from the Maya year as we know it, which begins on the 16th of July. It refers also to the fact that the year is not divided into the well-known 20-day periods, but into 13 actual lunar months, 28 days long [?], as I have already assumed in volume 65, number 1, of this journal. At present I shall express no opinion regarding the relative antiquity of the two calendars or regarding the spread of each among the different tribes or the probability that they may have existed side by side.

Now, the period of about 40 days during which the Pleiades disappear must coincide for the greater part with the fifteenth of the 18 20-day periods of the Maya, the so-called Moan month, from the 22d of April to the 12th of May. This month is designated hieroglyphically by the head of an unknown, probably mythical, bird (*b*, figure 112). The signs *c* and *d* also occur, apparently having the same meaning, and of these the second may indicate a bird's wing, raised up, while the first perhaps shows the intersecting paths of two heavenly bodies.

The editor has shown in the essay referred to above that with different peoples the Pleiades are designated by a bird or even a flock of birds. But with the Mayas these pictures display an attribute which furnishes a striking argument in favor of a connection between the Moan head and the Pleiades. It is the numeral 13 (*e*, figure 112), and rarely any other, which is placed before the signs in question. We see it thus accompanying the Moan head in the Dresden manuscript, pages 8b, 16c, 18b, and the second sign in pages 7c, 10a, 12a, etc. I think this can only mean that there is no reference here to the 20-day period Moan, or to a deity belonging to it, but to the thirteenth (last) lunar month of the year.

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[a] Die Plejaden bei den Mayas, Globus, 1894, v. 65, p. 246.

This view is supported by evidence from still another direction. Pax, as the sixteenth period, follows the 20-day period Moan. Others may have already observed that the sign of this period (*f*, figure 112) is the same as the sign for the year of 360 days. This sign and its unmistakable variants are common to both manuscripts and inscriptions. It has long been thought that they stood for the stone (tun) which was set up at the confines of the villages at the beginning of the new year; for example, in the Dresden codex, pages 25 and 28. I see in the two broad, vertical stripes a reference to the columns of glyphs which always cover the monuments of the Maya in pairs. Where two fishes (as happens sometimes on the stone monuments) or at least two fins (as is sometimes the case in the inscriptions and always in the manuscripts) are portrayed above this year sign, the sign means 20×360 = 7,200 days, as I pointed out some time ago in the Zeitschrift für Ethnologie, 1891, pages 141 to 153.

According to Perez's dictionary, cay means "fish" in the Maya language. Thus a fish placed upon a stone might be read caytun. Can this be an approximate representation of the word "katun", which, it is well known, was used to designate periods of time (varying probably at different times and in different parts of the country)?

Thus Pax proves to be that period which, after the reappearance of the Pleiades, or probably a little sooner, begins the year of 13 months, the previous one having ended with Moan. Therefore, at the time when the 20-day periods were introduced Moan and Pax, belonging to an earlier period of time, seem to have been retained to mark the former new year, while for others a few new signs at least had to be created.

Proceeding from the present communication, further research must not lose sight of two important points: (1) The meaning of the signs of the 20-day periods and their probable reference to constellations; (2) the cases where certain glyphs lacking calendar dates are combined with preceding numbers.

At all events the number of Maya glyphs whose meaning is becoming clear to us is increasing constantly. It is true, however, that we have not progressed as far with the inscriptions as with the manuscripts.

CENTRAL AMERICAN TONALAMATL

BY

E. FÖRSTEMANN

CENTRAL AMERICAN TONALAMATL[a]

By E. Förstemann

One of the most important devices common to both the Aztecs and the Mayas, thus doubtless a common possession of all Central America, is unquestionably the tonalamatl, that 260-day period in which the 13 week days are repeated twenty times; but these two peoples differ widely in the manner of representing this period of time. The Aztecs mechanically copied the pictures of the 20 days in the order of their succession in constant repetition, designating the position of every day in the 13-day week by a number, and finally adding the representations of the deities dominating the days and the weeks. To cite only one example, it is thus we see it in the Tonalamatl of Aubin, on which Doctor Seler has contributed an unusually full report in the Compte rendu of the Berlin Americanist Congress of 1888.

The Mayas, to whom I shall confine myself here, proceeded very differently. They first divided the tonalamatl into quarters, fifths, or tenths; that is, into periods of five, four, or two weeks each, or 65, 52, or 26 days. They represented the first day only in every division with its sign, and these stand off, one below the other, thus requiring for the whole tonalamatl only four, five, or ten signs. Above these a number sign indicates once for all the place in the week occupied by these days. Furthermore, not the whole tonalamatl, but only the first of its divisions of 65, 52, or 26 days, was divided into a number of equal or unequal parts, which were separated from each other by days on which apparently some particular business was performed or particular feasts were celebrated. These events are explained by pictures and glyphs. We are justified in supposing that the other parts of the tonalamatl were regarded as divided in exactly the same way as the manuscripts show the first part to be divided.

It might not seem necessary to express myself otherwise than briefly here, as I have already treated the subject in my Erläuterungen treating of the Dresden manuscript in 1886, and Mr Cyrus Thomas has discussed it still more thoroughly in his Aids to the Study of the Maya Codices in 1888, but the accumulation of material since that time and the rate at which knowledge of the subject has in the meantime progressed emphatically demand a fresh exposition.

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[a] Das mittelamerikanische Tonalamatl, Globus, 1895, v. 67, n. 18, pp. 283–285.

The matter is the more important because a large part of the surface of the manuscripts is covered with tonalamatls of this kind. To be sure, in those sorry remains which we call Codex Peresianus I find in one place only (page 17) a tonalamatl, of five parts, which seems to begin with the day VII 7. The Dresden codex, however, abounds in such examples, since it contains in its first part (not in the second, which is more astronomic) not fewer than about 70 of these tonalamatls. Their number can not be determined with perfect accuracy on account of the destruction of certain passages, the carelessness of the scribe, and other causes of uncertainty. Codex Troano-Cortesianus, however, is richest in tonalamatls; all its parts indeed abound in them. It presents not fewer than about 223 examples.

In order that this matter may not be too difficult for the comprehension of the reader, I will here give examples, taken from Codex Troano-Cortesianus, of the three kinds mentioned above:

1. Codex Cortesianus, pages 10b to 11b, tonalamatl of four parts:
XIII 9 IX 9 V 10 II 6 VIII 2 X 10 VII 5 XII 7 VI 7 XIII
19
4
9
14

2. Cortesian codex, page 17a, tonalamatl of five parts:
I 11 XII 12 XI 8 VI 13 VI 8 I
17
9
1
13
5

3. Troano codex, page 33b, tonalamatl of ten parts:
IV 11 II 6 VIII 3 XI 6 IV
8 18
14 4
20 10
6 16
12 2

The Roman numeral in the left-hand upper corner indicates the week day with which the tonalamatl begins; the Roman numerals at the right of it indicate the week days with which the different parts begin; the last week day (XIII, I, IV) must always be like the first, as the number of days is always divisible by 13 without remainder. The length of the different periods is shown by the Arabic numerals, and the sum of these must therefore be 65, 52, and 26. The vertical row of numbers on the left gives the so-called month days, reckoned from the day Kan. Whoever counts from Imix must set down 1, 2, and 3, instead of 18, 19, and 20, respectively, and increase the other numbers by 3. These days, in the three examples, are actually separated by 5, 12, and 6, but relatively by 65, 52, and 26, since the week day indicated above them in always included. However, I have explained this somewhat at length in my Erläuterungen.

The three kinds mentioned include the entire number of tonalamatls contained in the manuscripts, with the exception of a few anomalous examples, and it is quite worth while to learn in what proportion the three kinds occur in the two manuscripts.

	Dresden	Troano-Cortesianus
Tonalamatl of four parts	12	44
Tonalamatl of five parts	43	132
Tonalamatl of ten parts	8	40
	63	216

Both manuscripts, otherwise differing so greatly from one another, agree in this, that the division is by far the most frequent into periods of 52 days, into those of 65 days less so, and into those of 26 days least frequent of all. Indeed, the ratio of the tonalamatls of five parts to the entire number is surprisingly alike in both manuscripts: in the Dresden codex, 1 to 1.5; in Codex Troano-Cortesianus, 1 to 1.6. It is more a matter of chance with the other two kinds, owing to the smallness of the numbers; nevertheless the figures expressing the ratio of the periods of four parts do not differ very greatly: in the Dresden codex, 1:5.2; in Codex Troano-Cortesianus, 1:4.9. Who will be the one to discover the reason for this wonderful similarity?

But there are still other remarkable coincidences observed. While we have just seen that the division of only the first quarter, fifth, or tenth of the tonalamatl is carried out in detail, and it is left to the reader to apply this arrangement to the other sections, in isolated cases a tonalamatl of four parts (and only such a one) shows uniform treatment throughout. The Dresden codex offers three examples of this:

1. On each of the four pages 31b to 34b 46 days are separated into periods of 9, 9, 9, 2, 4, 9, and 4 days, and 19 days are designated as the distance of each one of these groups from the next; thus, 260=4 (19+46).

2. On pages 33c to 39c the division into 9, 11, 20, 10, and 15=65 days occurs four times in succession with great uniformity of detail; thus, 260=4 (9+11+20+10+15).

3. On pages 42c to 45c (the end of the first division) four repetitions of 17+6×8=65 days give rise in each case to a special row of glyphs and a special representation; thus, 260=4 (17+6×8).

I can quote two examples from Codex Troano-Cortesianus, which correspond perfectly:

1. In Codex Cortesianus, pages 13b to 18b, four horizontal rows, each of 52 days, follow each other in close succession, the last being

51 days distant from the first; from the end of each row to the beginning of the following one, therefore from the end of the last to the beginning of the first as well, there are 14 days; thus, 260=4 (51+14).

2. In the Troano codex, pages 33c to 32c, is another example. Four days standing in a vertical row are repeated four times, with a distance of 20 days between each row; that is, 3×20=60. From the last day of every column to the first of the next, therefore from the end of the last to the beginning of the first, there are 5 days; thus, 4×5=20. Consequently, 260=4 (5+3×20).

We should try to approach the secrets which lie concealed here from every side. Unfortunately, we have not yet passed the tentative stage. There is lack of workers in this comparatively new field, in which scarcely a dozen men are seriously laboring, and in which consequently each individual may hope for a comparatively rich harvest.

If we next inquire whether it is the subject of the particular part of the manuscript which influenced the choice of one or the other of the three kinds of tonalamatls, the answer is entirely in the negative. Thus all three kinds occur indiscriminately in the portion of the Dresden codex pertaining to women (pages 13 to 23). They appear in the same way in the other manuscript, in the section relating to household economy and agriculture (Codex Cortesianus, page 19; Troano codex, page 24*), in that relating to bee culture (Troano codex, pages 9* to 1*), and, finally, in that relating to the chase (Troano codex, pages 19 to 8), although it is a striking fact that in this latter passage in one instance (Troano codex, pages 12b to 9c) six of the unusual tonalamatls of ten parts follow each other in close succession.

If the question is put whether we have gained clearer views from the division of these periods of 65, 52, and 26 days, we must deny this also; still we must, notwithstanding this, continue to study them, for they may yet perhaps lead to new conclusions. It is noteworthy that there are in the Dresden codex 13 and in Codex Troano-Cortesianus at least 44 cases (in both instances from a sixth to a fifth of the entire number) in which the single parts consist only of periods of 13 or of 26 or of 39 days, that is, of undivided weeks. There are some very similar cases in Codex Troano-Cortesianus (not found in the Dresden codex) in which each week is divided into two unequal parts. Thus the 26 in the Troano codex, pages 9*c to 8*c, is divided into 2 (7+6), the 52 in Codex Cortesianus, page 19a, into 4 (7+6), and page 30a into 4 (8+5), the 65 in the Troano codex, page 33*b, into 5 (8+5), and vice versa, page 3*b, into 5 (5+8). The period of two weeks is even divided in Codex Cortesianus, page 28b, into 18+8, in order to form a period of 52 days.

Contrariwise, 26, 52, and 65 are never divided, respectively, into 13 sections of 2, 4, and 5 days; that has unquestionably been avoided.

Thus it is doubtless intentional, not accidental, that these three periods are often divided into the greatest number of equal parts, to which one or two more unequal parts are added or between which they are inserted in order to complete the sum. I here give the cases which have come to my knowledge:

1. $26=4\times4+10$ (Troano codex, page 25*c) $=4\times5+6$ (Troano codex, page 28*c) $=3\times7+5$ (Dresden codex, page 21b, also Troano codex, page 23*d).
2. $52=4\times6+28$ (Troano codex, page 29*a) $=8\times6+4$ (Troano codex, page 15*c) $=5\times8+7+5$ (Troano codex, page 24*d) $=5\times9+7$ (Dresden codex, page 8c, and Troano codex, page 31*c) $=4\times10+3+9$ (Dresden codex, page 40c) $=4\times10+12$ (Troano codex, page 8c) $=3\times11+10+9$ (Dresden codex, page 19c) $=4\times11+8$ (Troano codex, page 31b) $=4+6\times8$ (Troano codex, page 23*b).
3. $65=6\times10+5$ (Troano codex, page 35a) $=5\times12+5$ (Dresden codex, page 23b) $=3\times16+17$ (Cortesian codex, page 20d).

The varieties of intentional regularity are entirely exhausted by these examples, and I should waste space if I were to cite more. I will only add one from the Dresden codex, pages 4a to 10a, where the period of 52 days is divided into not fewer than 20 parts of from 1 to 4 days each without any intelligible order. All these 20 parts have a common superscription, consisting of two glyphs. And, besides, each part has belonging to it the picture of a god and a glyph closely connected with the latter. I have given a thorough study to this one tonalamatl and have really found much that is curious, which, however, is not yet ready for publication.

Let us now attempt to approach these tonalamatls from a third side, proceeding from the initial days. If the arrangement here were left to chance, we should, on an average, find each of the so-called month days in one-twentieth and each of the week days in one-thirteenth of all the cases. But this does not accord with the actual facts in two points in which the two manuscripts agree with each other in a very remarkable manner.

(1) Among the month days both give decided prominence to the seventeenth day (Ahau, "lord"), which was by far the most exalted day, and the one most in use among the Mayas and also the beginning of their entire computation of time. Ahau stands 14 times at the beginning of the tonalamatl in the Dresden codex and 59 times in Codex Troano-Cortesianus, thus in between a fourth and a fifth instead of in a twentieth of all the cases.

(2) Among the week days, the first and the last, I and XIII, were greatly preferred. They appear in the Dresden codex 9 and 11 times; in Codex Troano-Cortesianus 27 and 25 times, respectively,

amounting, therefore, in the former to about one-third and in the latter to about one-fourth of all the cases, instead of only two-thirteenths. I can further add that the day IV 17 in Codex Troano-Cortesianus stands at the beginning of the tonalamatl about 24 times. Its importance is not so plainly shown in the Dresden codex on account of the smallness of the number (I know only of two cases); IV 17, however, is the day from which computation of time begins. Codex Troano-Cortesianus (41 instances) gives to IV even greater prominence than to I or XIII.

Apart from these points, the week days and month days in both manuscripts are purely the result of chance and caprice.

This being so, we arrive first at two negative results:

(1) The tonalamatls of the Maya manuscripts do not immediately follow one another like months and years; else they would all have to begin with the same day, which would always recur after 260 days.

(2) Neither can they have a fixed place in the year; else their first days, even on the supposition that intercalary days were inserted after certain periods, would easily be seen to follow a definite rule. The year, or at least the exact date in the year, would also occasionally be stated, but as yet I find no traces of this.

I have a special reason for speaking of this second point, since the distinguished and untiring worker in the field of Aztec research, Mrs Zelia Nuttall, at the Americanist Congress held last year at Stockholm, presented her treatise On the Ancient Mexican Calendar System, in which with great ingenuity she advances the view that with the Aztecs the tonalamatl as a special festal season occupied the middle of every year of 364 days, which was preceded and followed by four weeks. I do not deny that the Mayas had such a festal season, but the tonalamatls of the manuscripts surely have nothing whatever to do with it.

After these negations let us ask what these tonalamatls really are. I can only arrive at the following hypothesis, which may very soon be superseded by a better one: The tonalamatls of the manuscript are kinds of horoscopes which were cast by the priests for the purpose of foretelling the future lives of persons, classes, or tribes, as well as future political events or natural phenomena. They may have been so employed because they approximate periods of pregnancy. Naturally, they had constant reference to the mythologic personages, but had no connection whatever with the established calendar.

This hypothesis also explains the fact that such horoscopes were occasionally cast, not for only 260 days, but for multiples of this period. I believe I have found five cases of this in the Dresden codex. I give them here in a table showing in the first column the place in the manuscript, in the second the distance of the month days from each other, in the third the same with reference to the week days, and in the fourth the entire resulting period:

Pages 22a to 23a	19	39	20× 39=3×260
Pages 30c to 33c	17	117	20×117=9×260
Page 32a	11	91	20× 91=7×260
Pages 38b to 41b	4	104	5×104=2×260
Page 44b	18	78	20× 78=6×260

In addition, there is the somewhat differently arranged passage, pages 32a to 39a, where 16×13=208 days are given, which point to 10×208=8×260. I have already discussed three of these six passages in my Erläuterungen, pages 26 to 27.

I am glad to be able to add to this table two parallel cases from Codex Troano-Cortesianus:

Codex Cortesianus, page 10a	4	104	5×104=2×260
Troano codex, pages 31c to 30c	19	39	20× 39=3×260

The reason for these multiple tonalamatls is obvious: 260 is not divisible without remainder by 39, 78, 91, 104, and 117, as it is by the numbers mentioned above, 26, 52, and 65.

In addition to the main object of this article, I desire to point out for the first time that the two highest intellectual productions of the Western Hemisphere, so far as we now know, the Dresden and the Madrid manuscripts, with all their points of difference, show very surprising similarities, which prove them to be much more nearly related than has been hitherto supposed. It is unnecessary to discuss here the tonalamatl in Codex Cortesianus, pages 31 to 39, where it is completely written out with all the 260 days.

RECENT MAYA INVESTIGATIONS

BY

E. FÖRSTEMANN

RECENT MAYA INVESTIGATIONS[a]

By E. Förstemann

A bibliography of a science is the boundary mark in its history, and such a boundary mark has now been set for Maya investigation. The Centralblatt für Bibliothekswesen, in the last number for 1895, contains an article by my former colleague, Prof K. Haebler, Die Maya Literatur und der Maya Apparat zu Dresden. What I wrote on the same subject, in an article contributed in 1885 to the same journal, has here been immensely expanded in accordance with the surprising activity evinced in this branch of science in recent years. No one has greater cause to rejoice than I that the Dresden Library, since my retirement from it, continues to take an interest in the work of this department, as becomes the custodian of the most important manuscript in Maya literature. From 400 to 500 books, treatises, and notices, some from quite obscure American journals, have been recorded there by Doctor Haebler, with extraordinary labor and the greatest care. Thus this literature has been rescued from the deplorably scattered condition which characterized it, owing to the fact that the book market supports no special journal for Maya literature, nor even one for Central American research in general. It is a matter of course that absolute completeness and perfect accuracy are unattainable, and for this reason I am glad to be able to announce that Mr Marshall H. Saville, of New York, whom we have recognized as an earnest worker in this field since 1892, is just now occupied with a Maya bibliography, which we shall rejoice to see placed side by side with the German one, and which will certainly add much that is new to the material already in our possession.

We, too, have new and important matter to record, which has appeared since the German bibliographer issued his treatise. The fourth volume of the Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, issued in 1895, contains two valuable treatises in close succession, namely, on pages 13 to 20, "Altindianische Ansiedelungen in Guatemala", by Karl Sapper, and on pages 21 to 53,

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[a] Neue Mayaforschungen, Globus, v. 70, n. 3, 1896.

"Altertümer aus Guatemala", by Eduard Seler. The names of these two German investigators, Sapper and Seler, who are both entitled to a hearing by virtue of long or frequent sojourns in the country of which they write, and who have given us most valuable results from their serious researches, are guarantees that the two papers contain welcome information. We may undoubtedly expect further communications in this particular field from Mr Seler in the near future, for on February 9, 1896, he writes from Tonala, in Mexico, to the Geographical Society in Berlin that he is on the point of going to Guatemala.

Furthermore, the long-delayed appearance of the fifth part, text as well as illustrations, of the "Archaeology" of A. P. Maudslay, which, oddly enough, forms a part of the Biologia Centrali-Americana, or Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America, is very gratifying. Maudslay confines himself in the text, as he has done before, chiefly to the story of his investigations and the description of the structures which have been found. Mythology and the study of inscriptions are not so much in his province, and yet both departments can derive great benefit from the admirable illustrations. While the earlier parts were chiefly concerned with Copan and Quirigua, that is, with the region inland from the Gulf of Honduras, this fifth part carries us some 6° farther north and treats of the extensive ruins of Chichen-Itza, which have not been described for nearly two decades, and only very meagerly before that time. From my point of view it is especially important and gratifying that these ruins also show a considerable number of inscriptions which, as a rule, rarely occur north of 18° north latitude, whereas Chichen-Itza lies 2½° farther north. I will here mention what seems to me a very interesting as well as important point.

While the Aztecs indicate the number 5 only by five small disconnected circles, the Maya represent it by a straight line; thus the latter obtain two number signs, the point or circle and the line. In this way only is it possible for them to represent large numbers with so much ease, which the Aztecs could never succeed in doing with their circles and their signs for 20, 400, and 8,000. I had hitherto been familiar with this line for 5 only in the Maya manuscripts, in all of which it is very common, also in the inscriptions of the ruins and vessels of Palenque, Coban, Quirigua, and Copan, and finally in the wooden tablets of Tikal, but not in anything coming from Uxmal or Labna in the north of Yucatan. Hence, all the more eagerly I hailed the presence of this sign in Chichen-Itza, where it occurs very often.

The familiar Ben-Ik sign occurring often in manuscripts and inscriptions, for which I proposed an interpretation in the Globus, volume 65, number 20, is also frequently met with here. It even occurs in connection with ahau, with which it is otherwise rarely seen. We likewise see here the frequent glyphs kan, ahau, imix, kin, and others, in their usual and easily recognizable form.

The frequently occurring day glyph Manik is worthy of note here. According to Mr Seler it represents a hand grasping upward, which is distinctly corroborated by the inscriptions of Chichen-Itza, for they reproduce the hand very clearly, even with the thumb nail and that of the forefinger (it is to be hoped that the illustrations do not give more than the originals). I now also understand the Maya sign for the west, which I no longer take for the sign of the east, as I did in 1886. Manik with kin represented below it shows how the sun has descended from above. Reversed, kin with Ahau above, it means the east, the beginning of the dominant sun. The south is similarly symbolized by the sign yax ("strength") with the scales above it, while the north is represented by the polar star, god C. But what can be meant where the day Manik on the upper part of plate XII is combined three times with an 8? Does it signify an eighth day of the week? A similar question arises from the fact that we see the number 11 combined with the sign which indicates either the day Cauac or one of the three months Yax, Zac, and Ceh, for the four cases are all characterized by the symbol resembling a bunch of grapes (honey?). The combination of 11 (Zac is the eleventh month) with this glyph appears on the two plates XII and XIX. Curiously enough the sign Ahau with Ben-Ik above it follows it in both cases.

Unfortunately, in Chichen-Itza the stelæ seem to be as completely lacking as Maudslay has reported them numerous in Copan and Quirigua; for that reason the interesting exact dates which are expressed by means of large numbers are also wanting here. I have likewise been unable to find an example of the usual calendar dates, which consist of two numbers and two glyphs, and which are found not only in the manuscripts, but are very numerous elsewhere; for example, on the Cross of Palenque.

With this we leave the work of Maudslay, with the hope that he may vigorously prosecute his researches, and also that his work may come into more extended use than has hitherto been the case.

I must now mention the Verhandlungen der Berliner Gesellschaft für Anthropologie, of the regular session of December 21, 1895. Here my friend Doctor Schellhas, as he has done before more than once, presents three essays by our mutual friend Dieseldorff at Coban (Guatemala): (1) A Relief from Chipolem, (2) Cukulcan, and (3) The Vase of Chama. The three essays all show how successfully Mr Dieseldorff continues to conduct his researches and how satisfactorily the material at his command has increased (as well as the scientific collections). I shall pass over the difficult and much discussed Cukulcan question, which has been touched upon in both the first and third essays, for I do not like to venture upon mythologic ground.

In reference to the Vase of Chama, both Seler and Dieseldorff have taken exceptions to my attempted explanation of it, and in this they may not be wholly wrong. But it is never safe to attack certain details, if other details which, in connection with the former, both pictorially and in writing, tend to establish the general fundamental idea of the representation are passed over in silence.

While writing this I have received from Mr Philipp J. J. Valentini, of New York, the second part of his "Analysis of the Pictorial Text Inscribed on Two Palenque Tablets", reprinted from the Proceedings of the American Antiquarian Society, Worcester, Mass., 1896. The author, whom since 1878 we have esteemed as an earnest investigator in this field, continues to discuss the two sides of the inscription on the so-called cross monument. He offers many observations, which certainly contain much of lasting worth, from the store of knowledge gathered chiefly during his long stay in the states of Central America. But it is all the more to be regretted that, contrary to the method prevailing on almost all Maya monuments, he persists in reading every column separately from top to bottom, instead of always taking two columns together. Consequently, his conception of many of the details, as well as of the whole, is incorrect. It is necessary to become cognizant of the whole framework of this inscription, which consists of a number of calendar dates, with their intervals stated in numbers. Only then will it be possible to recognize more clearly the remaining signs, by means of which the events occurring in the intervals must be determined.

In the articles mentioned thus far the authors express themselves variously on the question actually underlying all these investigations, namely, the relation to each other of the two civilizations that are here under consideration, the Aztec (Nahua) on the one side, and the Maya on the other. In his article Altertümer aus Guatemala Doctor Seler adopts the theory of a movement of the Maya southward (page 24), while (page 46) he speaks of a southward migration of the Nahuas (as far as Nicaragua) from Tabasco, and even suggests that they may have migrated to Yucatan. Mr Dieseldorff (page 774), on the contrary, holds the theory that Maya art was developed independently, and that the connecting link between the two civilizations indicates an exchange of cultural influences between them in which the Maya race was the giver and the Nahua was the receiver. He is of the opinion that the unfortunate downfall of the Maya power one or two centuries before the Conquista was directly caused by the Nahuas. On page 776 he advances the idea that the Nahua received their deity Quetzalcoatl, from the Toltecs, and that the Toltecs were a Maya tribe. Finally, Mr Valentini expresses the opinion that the Mayas were the aboriginal race and the Aztecs "mere parasites".

Now that these expressions of opinion and countless earlier discussions on the same subject lie before us, it is time that for once a consistent hypothesis should be framed regarding the whole matter, on the principle of the old adage that even a faulty hypothesis is better than none at all, and that all progress must have a point from which it advances.

In this case, however, such an hypothesis must seek to offer an explanation for the following facts:

1. The similarity and at the same time the difference of the two civilizations.

2. The antiquity and mystery of the vanished Toltec race.

3. The entire separation of the Huastecs in 22° north latitude (between Tampico and San Louis Potosi) from all other Maya tribes and their distinguishing characteristics.

4. The equally complete separation from the other Aztec tribes of the Pipiles (in southeastern Guatemala), and of those Aztecs who had pushed forward as far as Nicaragua.

5. The curious fact that almost no Aztec place names appear in Yucatan, while they are met with by hundreds in Chiapas, Guatemala, and Honduras as far as Nicaragua, leaving almost no traces of Maya names on the maps.

On the other hand, little care need be taken to make the hypothesis agree with the ancient native accounts of wars and migrations. If it does, then such accounts will always be welcome in spite of their legendary nature.

In presenting my hypothesis as a connected chain of opinions, I ask those who attack any one of these opinions, and thus propose to destroy a link of this chain, to take care at the same time to replace it by another and a stronger link.

I assume that in the most ancient period of Central American history with which we are acquainted the country from about 23° to 10° of north latitude was chiefly inhabited by different tribes of the Maya race. Indeed, one can assume that, beyond the mainland, this race also occupied the island of Cuba, which is still archeologically unknown. Such a theory is favored by certain facts connected with the first expedition of Cortes (see, for example, Peter Martyr, pages 10 and 11 of the edition of 1521). While this race was still at quite a low stage of civilization the Aztecs advanced out of the north from at least 26° north latitude. Their advance took place on the Pacific, not on the Atlantic, side (Brinton, American Race, page 128), and this explains the fact that the Huastecs remained almost undisturbed in the east. Maya civilization soon influenced the Aztecs very perceptibly and it was natural at first that they should call the Mayas

Toltec after one of their northern branches, the inhabitants of the region about Tula, in the north of Mexico. That, when connection between the Aztec and Maya became clearer, the Toltecs passed more and more out of view and at last became legendary reminds one of the Allemands, who are not found in Germany at all at the present day, or of the Graeci in Greece, etc. Incidentally, I am reminded of the place Toltecapan, east of Mexico and ñorth of Tlaxcala.

The Aztecs adopted as their own many things which they learned from the Mayas, especially their deities, whose names they simply translated. The translation of Cukulcan into Quetzalcoatl is a very typical case, for kuk (in the Pocomchi dialect) and quetzal designate the bird Pharomacrus mocinno or Trogon resplendens, and can and coatl mean the snake. That the Mayas had already developed their writing in this locality is inconceivable. This first took place in the center of their territory, in the region of Guatemala. The Aztecs first came in contact with the higher civilization developed here after a migration into the Mixtec and Zapotec territories had taken place, which was not very long before the arrival of the Spaniards, so that they did not have time here to establish their supremacy and to absorb the Mayas, but, on the contrary, were absorbed by them. The Pipiles on the outposts on Lake Nicaragua, which had advanced farthest and passed beyond the principal territory of the Mayas, alone preserved their individuality.

Now, whence come the hundreds of Aztec names in the territories between Chiapas and Nicaragua? In this connection we must note that these names are confined almost entirely to the important settlements, while the unimportant places bear designations belonging to the language of the Indians settled there. The Aztec names of the more important places, moreover, are really used only officially and hence are on the maps. That part of the population which keeps aloof from the Spanish-speaking part uses only the names derived from the native language. Aztecs as well as Mayas use and always preferred to use place names which are verbally comprehensible to them, and on this account they employ for the name which they can not understand a native expression, a translation, or some other substitute. Hence in this case Sapper concludes, Globus, volume 66, pages 95 and 96, that these Aztec names were mostly given to the places by the Spaniards, who, as we know, were familiar with Aztec, and by their Mexican auxiliary troops, but that this tendency had ceased by 1535. For this reason, according to him, Aztec names are not found in Yucatan, which was not conquered from Mexico. I confess that at first I was not in sympathy with this view, but I can not replace it by a more acceptable one.

The higher Maya civilization which grew up around Guatemala had not yet fully spread over Yucatan when its further development was checked in the south by the Spaniards and by the Mexican influence which came with them. It probably had not lasted very long. if my opinion, expressed in Zur Entzifferung der Mayahandschriften, IV, page 9, that the stelæ of Copan do not date further back than the fifteenth century is found to be correct.

There may occasionally be an isolated Aztec name that strayed into northern Yucatan; I am reminded of Mayapan, lying southeast from Merida, for names ending in pan are Aztec. It remains to be proved whether the narratives of the old native chroniclers, who attach special importance to this Mayapan, throw any further light on that matter.

I expect, however, the most light in reference to Yucatan from the investigations which Teobert Maler is carrying out on a gigantic scale, of which the Globus, volume 68, pages 245 to 259 and 277 to 292, gives such brilliant evidences. It is to be hoped that the results of these investigations will soon appear as a whole.[a]

After concluding this article I received the eighth publication of the Field Columbian Museum of Chicago, which forms the first number of the anthropological series. It has the special title Archæological Studies Among the Ancient Cities of Mexico, by William H. Holmes, part 1 (Monuments of Yucatan), Chicago, 1895. The author here treats of the first part of a three months' journey, from December, 1894, to February, 1895, to Yucatan, Chiapas, and Oaxaca, and describes first what he saw of Maya ruins in the little explored region of northeastern Yucatan, from Cape Catoche to Tulum, and in the islands off that coast, Cozumel, Mugeres, etc.; then follows an account of a brief visit to Uxmal, Izamal, and Chichen-Itza. The rest of the journey (Palenque, Oaxaca) is reserved for a later number. The whole is a very welcome report on the extant buildings, together with a very clear survey of Maya architecture in general, which verifies and supplements much that is already known. I wish especially to mention the large number of illustrations accompanying it, among which I call particular attention to the plans of the site of Uxmal and Chichen-Itza and a general view of the ruins, which for the first time give us a really clear comprehension of these magnificent ruined piles.

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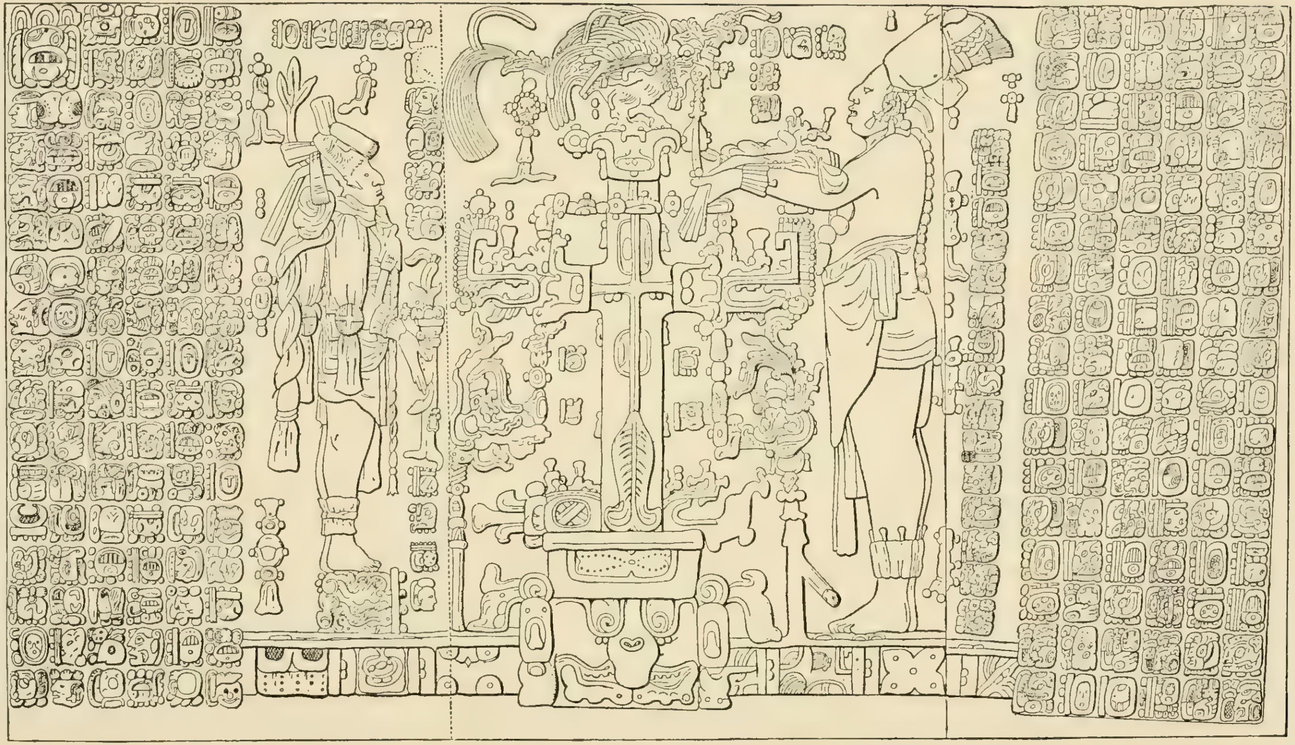
[a] They have been published as a Memoir of the Peabody Museum, vol. II, n. 2. C. T.

THE INSCRIPTION ON THE CROSS OF PALENQUE

BY

E. FÖRSTEMANN



THE TABLET OF THE CROSS—PALENQUE

THE INSCRIPTION ON THE CROSS OF PALENQUE[a]

BY E. FÖRSTEMANN

It is high time for science to occupy itself with the meaning of the most famous inscription of ancient America, even though it will be a long time before a complete decipherment of this monument can be achieved.

The ruins of Palenque have been known since the middle of the last century, and as early as 1787 they were investigated and partly sketched by Antonio del Rio. The inscription on the Cross, in particular, early aroused the attention of the amateur and the scientist. Since the beginning of our century it has been mentioned frequently, discussed superficially, and copied many times. Especially through the admirable drawing in J. L. Stephens's Incidents of Travel in Central America, Chiapas, and Yucatan, this monument has become widely known since 1841.

But the question as to the real meaning of this tablet (plate XLI) has been approached with great hesitation, although it was clear at the first glance that the middle part represented a great sacrificial scene; the glyphs, about 250 in number on both sides of it, however, remained dumb.

I can call attention to but three works in which the first attempts have been made to treat the subject in a strictly scientific spirit. I refer to the three following treatises:

1. Charles Rau, The Palenque Tablet in the United States National Museum. Washington, 1879. (Smithsonian Contributions to Knowledge, volume 22, Washington, 1880.) This work is of decided merit in the history it gives of the inscription, as well as in the designation, first introduced by Rau, of the vertical and horizontal lines by letters and numbers, which designation I have likewise adopted in the following. Rau also examines some glyphs of this tablet, but is successful only in the case of a few almost self-explanatory day signs. Concerning the main question, the meaning, he comes pretty near to

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[a] Die Kreuzinschrift von Palenque, Globus, v. 72, n. 3, July 17, 1897.

the truth in his remark on page 63: "I venture to suggest that the inscription constitutes a chronologic record of some kind".

2. Cyrus Thomas, A Study of the Manuscript Troano. Washington, 1882. This contains the special chapter, pages 198 to 208: Inscriptions on the Palenque Tablet. The author here settles, beyond dispute, the order in which the inscription is to be read (two columns at a time). With his accustomed carefulness he examines one series of characters and, although he does not accomplish his purpose, he very nearly succeeds in reading correctly the various periods occurring here.

3. Philipp J. J. Valentini, Analysis of the Pictorial Text Inscribed on Two Palenque Tablets; parts 1 and 2. Worcester, Mass., 1895–1896. Valentini lays stress on the decided ritual character of the inscription; at the beginning of the first column he finds the portraits of the founders of the theocracy of the country, and farther on the scattered pictures of later priests, with an account of their time and the manner of their ritual activity. He especially directs his attention to the discussion of the separate day signs and the relation between the monumental characters of the inscription and the cursive characters of the manuscripts, in the course of which he makes a number of suggestive observations. The author unfortunately adheres to the idea of reading each column separately, and so deprives himself of the possibility of finding the right way to interpret the connection.

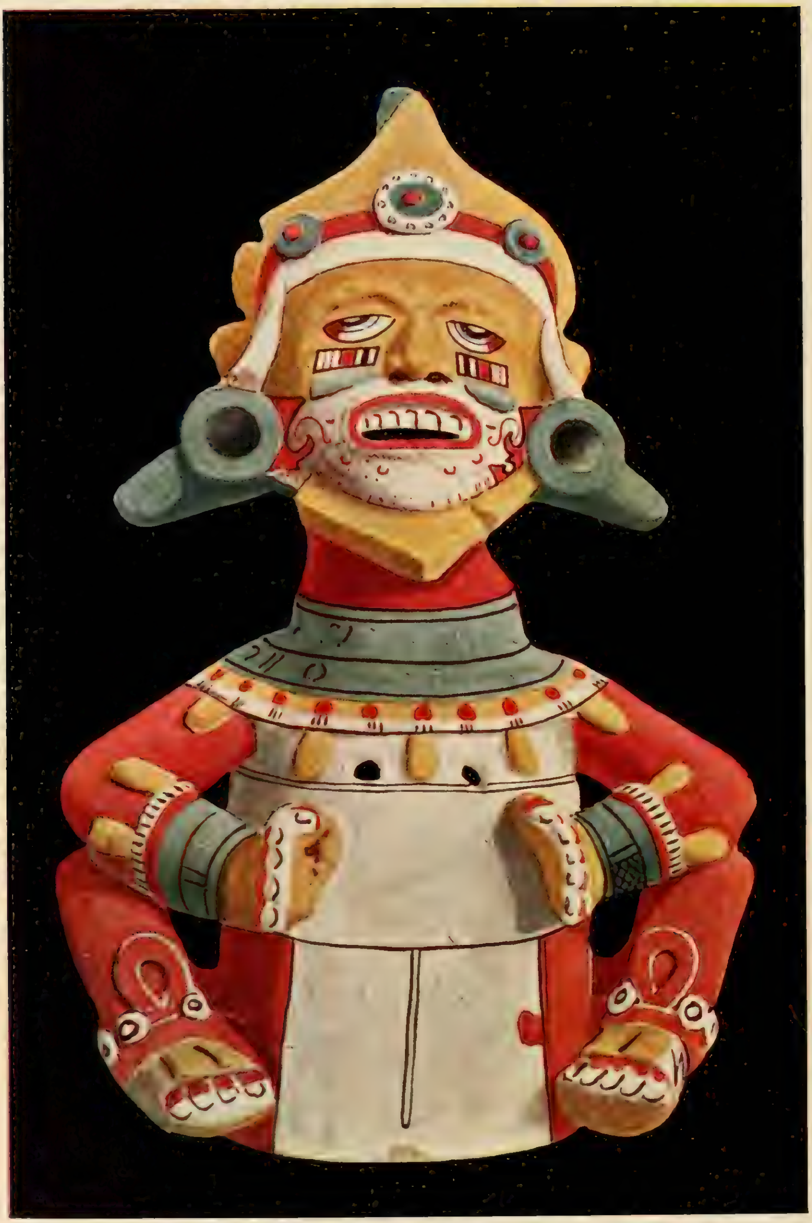
In what follows I shall abstain from all controversy with my predecessors and leave my opinions to vindicate themselves.

Long after the following had been written, I received a treatise by Lewis W. Gunckel printed in the American Anthropologist for May, 1897: The Direction in which Mayan Inscriptions Should be Read. This memoir treats chiefly of the inscription of the Cross, but does not touch upon its meaning, merely discussing the succession of the characters, a point which I had long since settled in my own mind and which Mr Gunckel also recognizes.

We see, therefore, that little progress has been made hitherto toward comprehending the meaning of the Cross inscription. But we are fortunately enabled by the successful interpretation of the Maya numeral system and the discovery of the meaning of several glyphs to make a considerable advance in this direction.

This progress results chiefly, however, from the observation that the inscriptions of the Maya region, excepting some short inscriptions on buildings and altars, are of two different kinds:

(1) The so-called stelæ, which, as a rule, display glyphs in pairs of vertical rows, beginning at the top with a large number lying between one and one and a half millions, which, reckoned from the starting



PAINTED CLAY IMAGE OF THE GOD MACUIL XOCH

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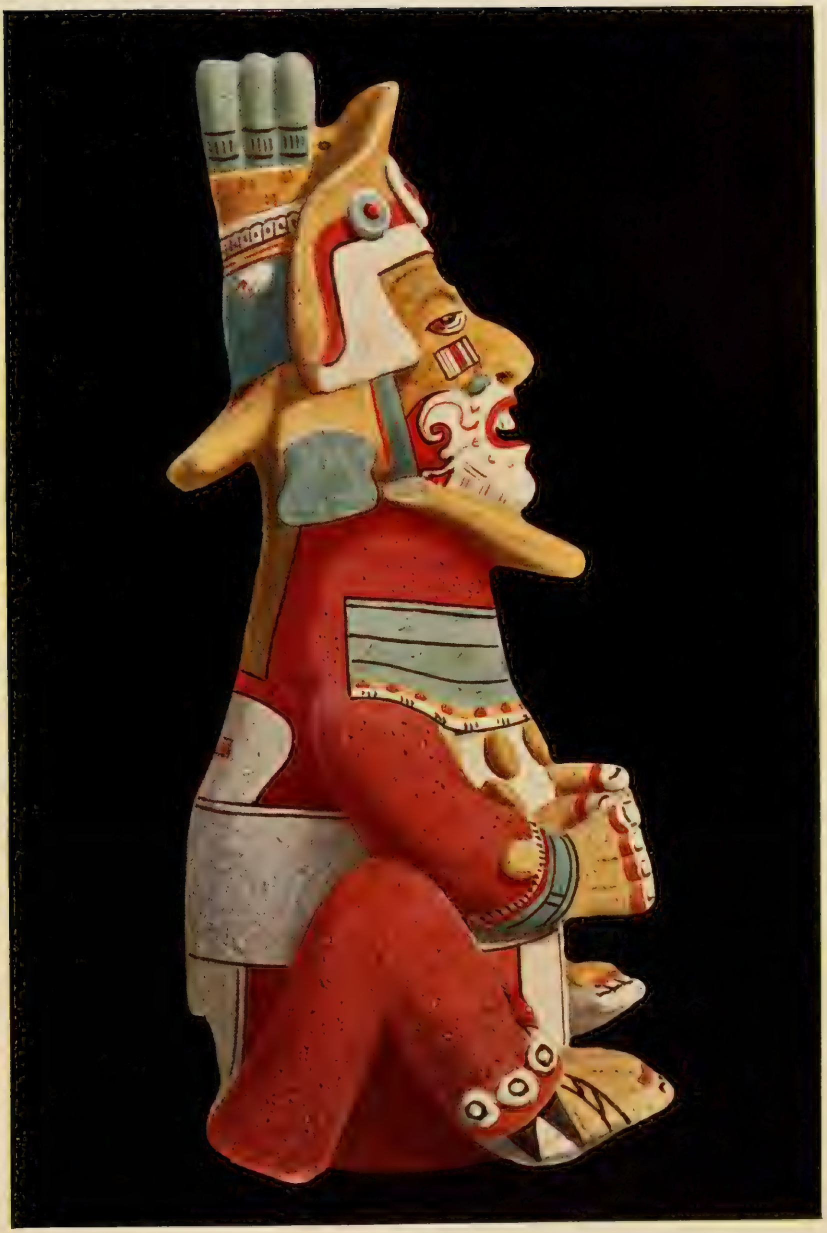


(FIVE FLOWER), FROM TEOTITLAN DEL CAMINO

M OF ETHNOLOGY, BERLIN

point of Maya chronology, denotes the present day or at least a day that is near the present.

(2) The broader inscriptions, the framework of which consists of calendar dates, between which large numbers are interspersed that state the interval between each two dates. Between these dates and intervals there are some other glyphs, for the most part still wholly unexplained. The Cross inscription belongs to this second class.

Leaving aside the center of this tablet as not pertinent to my present task, I will now give here the six columns of glyphs on each side, containing seventeen glyphs each, to be seen on the left and right of the central sacrificial scene (plate XLIII).

Thus we see here 201 glyphs. There would be 17×12=204 were not the first four places above on the left occupied by a single character, the superscription, such as is customary in inscriptions of both kinds (with some variants). In this case this superscription consists of three parts, aside from the ornaments added at the top and bottom. The character for the year of 360 days occupies the chief place; on the right and left of it are added the fins, by which the year is increased twentyfold, that is, to 7,200 days; above it we see a character never yet discussed, to which we must ascribe the meaning of 20×7,200=144,000 days, as will be shown farther on.

This superscription, compounded of the three largest time periods in use, accordingly means something like "chronologic guide" or "historic table".

The larger part of the two columns A and B under this superscription seems like an introduction or a guide to the remainder. It sets forth certain glyphs of special importance, necessary for the comprehension of the rest. Signs B 4 and B 5 are important to us as having been interpreted beyond question, for I may now assume that their meaning, 7,200 and 360 days, is fully recognized. Then follows, almost of necessity, B 3=144,000 days, as the sign of a similar form in the superscription has led us to conjecture, and as we see it repeated in C 5, F 6, U 2, and V 12.

I am equally certain that I see in B 6 the sign for 20 days, although it has no resemblance to the corresponding signs in the manuscripts. This is confirmed by no fewer than sixteen succeeding passages in this inscription. The character employed here appears to be a day sign, Chuen, and such it has already been considered by others. As this day lies in the middle of a 20-day period beginning with Imix, it may, perhaps, denote the whole period.

Now, the four characters B 3 to B 6 are each connected with a picture, A 3 to A 6. These can hardly be pictures of anything but gods, who preside over such periods, although up to this point we have known nothing of these deities. In fact, in F 10 instead of the sign for 360 we notice the corresponding picture, just as the same substitution occurs on other monuments; for instance, on the inscriptions in Stephens, English edition, D 7 and H 11 in the beginning of volume 2, the same on page 342, and the first sign on page 7.

Now, B 7 is quite logically the sign kin, the single day. In A 7 there is no longer a picture belonging to it, but a hand, probably because the single days were simply counted on the fingers. I will not attempt to explain the figure drawn above the hand. In D 4 we see the same character reversed, the hand on top, the rest below.

In B 8 follows Ahau, the most important of the days, and in A 8 the god D (Izamna) belonging to it. This deity is recognized by the open mouth and the solitary tooth, visible in some copies of this passage.

Concerning A 9 and B 9 I hardly venture a conjecture. Are these signs meant to express the day 20 (Akbal) and the god B (Cukulcan)?

Thus far the characters in A are joined to those in B with no intervening space. From here on each of the two signs in the adjacent columns is independently drawn.

In B 10 we notice the numeral 5. It seems as if A 10 and B 10 might denote the 5 unlucky days at the end of the year.

A 11 I do not know how to explain; it must refer to B 11. The latter, however, is composed of the numeral 2, a face looking toward the left, and a hand pointing to the right. It might be considered as suggesting the change from the old year to the new, the last day of the old and the first day of the new year, which two days are the principal subject of representation in pages 25 to 28 of the Dresden codex.

A 12 and B 12 are wholly obscure to me.

In A 13 we see a crescent and under it the numeral 9. Nine lunar revolutions formed a sacred period, especially as this length of time nearly corresponded with the tonalamatl. The moon sign in B 13 must be closely related to A 13.

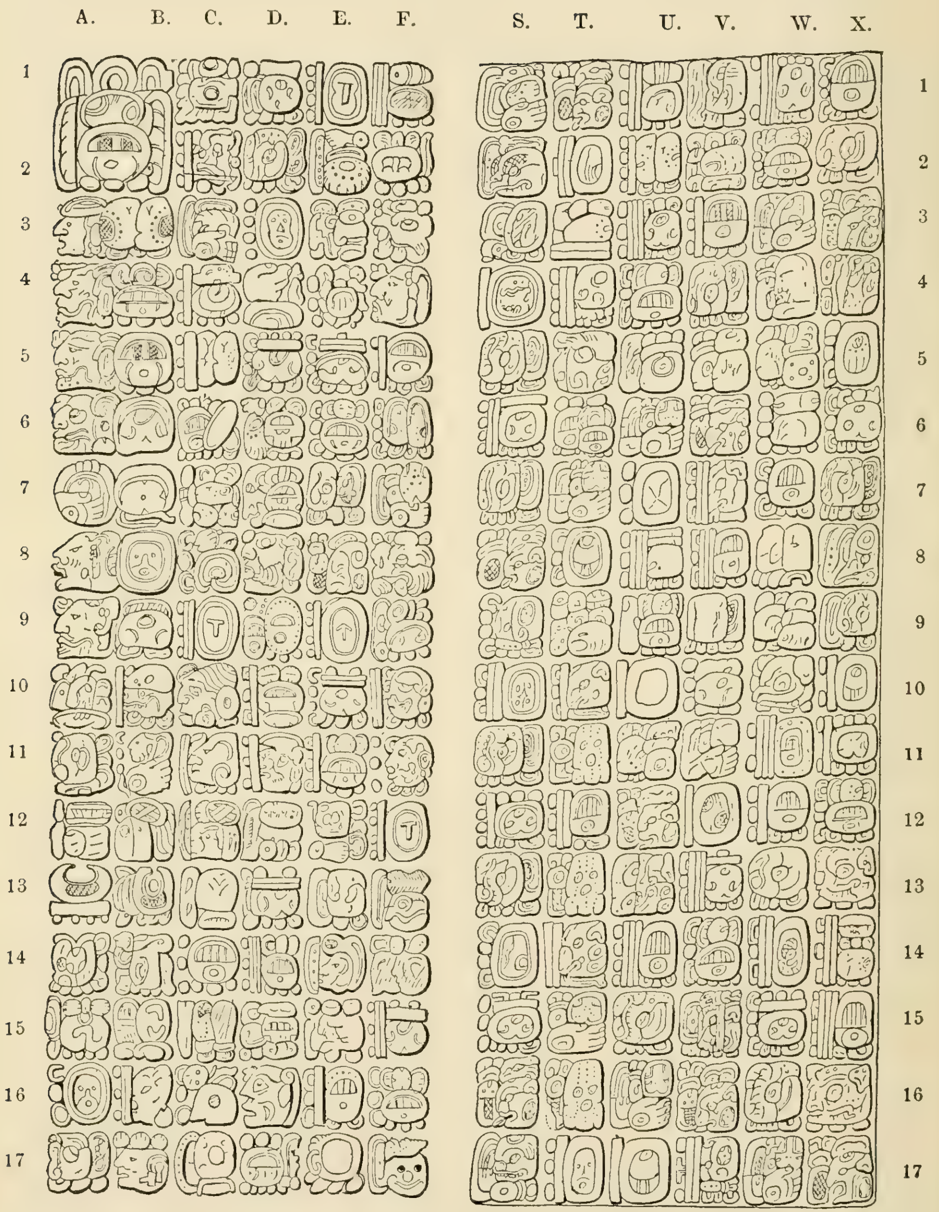
In regard to the four characters, A 14 to B 15, I am unable to decide whether they are to be regarded as the end of this introduction or as the preliminaries of the real subject-matter of the inscription.

With A 16 begins the regular alternation of dates and periods, which continues to the end of this tablet.

The points of time, or calendar dates, as I proved long ago, have the formula: I 17; 18, 17th month.

This formula designates a certain specified day recurring after a period of 52 years, that is, the first day of the 13-day week when it is the seventeenth of the 20-day period and the eighteenth of the seventeenth so-called month.

The time periods, on the other hand, have as the first sign that for the 20-day period, which we have already found in B 6. There is a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INSCRIPTION ON THE TABLET OF THE CROSS—PALENQUE number both above and before it. The first states how many such periods are meant; the second, how many additional single days. Then follow the signs for 360, 7,200, and occasionally also for 144,000 days, provided with numbers which indicate how many such periods there are.

In accordance with this the following is the actual framework of the inscription:

	Date	Interval
1	A 16 B 16	D 1 C 2
2	D 3 C 4	D 5 C 6
3	C 9 D 9	D 10
4	C 11 D 11	D 13–D 14
5	E 1 F 1	F 5–F 6
6	E 9 F 9	E 10–F 11
7	F 12 E 13	F 15–F 16
8	T 2 S 3	T 3
9	S 4 T 4	S 6 T 6
10	T 8 S 9	T 9
11	S 10 T 10	S 12 T 12
12	S 14 T 14	S 15
13	T 17 U 1	U 3–U 4
14	U 7 V 7	U 8–U 9
15	U 10 V 10	V 13–V 14
16	U 17 V 17	W 1–W 2
17	X 5 W 6	X 6–W 7
18	X 10 W 11	X 11–X 12
19	W 14 X 14	W 15 X 15

Of the pairs of glyphs, which together express a certain date, the first (A 16, D 3, C 9, etc.) must always designate one of the 20 days, the second (B 16, C 4, D 9, etc.) one of the 18 so-called months. This observation will decidedly facilitate the final deciphering of this and of kindred inscriptions, although progress in this direction is checked by countless difficulties—variants, deviations of the monumental from the written text, abrasion, and disintegration. If I were to review the entire tablet in detail, the numerous queries would still give the impression of a barren waste. I can only direct attention here to a few points of special interest.

The study of the first two dates and the intervening period is already sufficiently interesting. It reminds us of the beginning of the large numbers and dates on page 24 (below on the left) of the Dresden codex. Here we found two dates

I 17; 18, 17th month.
IV 17; 8, 18th month.

and perceived that they were separated by 2,200 (8×260+6×20) days. Now, we find in the Cross inscription:

A 16: I, 17 B 16: 18, unknown month.
D 3; IV 17 C 4; 8, 18th month.

Between them, however, is D 1, the sign for 20, and above it, as there was no room on the left, in all probability a 6 (the 1 for lack of room close to the 5), and in addition C 2, an unknown glyph, with 8 prefixed. I think that nothing is more natural than to regard the obscure character B 16 as the seventeenth month (Kayab) and C 2 as a glyph for the tonalamatl. The stonecutter of the Cross inscription, therefore, proceeds from the same two dates from which the writer of the Dresden codex proceeds, and this fact increases the probability, already appearing from other circumstances, that the Dresden codex had its origin not far from Palenque, probably in the district of the Tzentals, who, therefore, should receive closer attention from this time forward.

In spite of many difficulties the interpretation of a few of these groups can be considered correct, as the specified period agrees with a preceding and following date, inasmuch as it is the interval between them. I here give some examples in which, in order to facilitate the examination, I will state the years found by computation in which the dates are contained.

The simplest example is the twelfth date, the twelfth period, and the thirteenth date, as follows:

S 14 T 14: II 14; 10, 6th month. (11 Muluc.)
S 15: 3+6×20=123.
T 17 U 1: VIII 17; 13, 12th month. (11 Muluc.)

In fact, day II 14 precedes VIII 17 by 123 days, and day 10, 6th month is 123 days before 13, 12th month. The year remains the same.

I will add that day VIII 17 in the last part of the Dresden codex is of special importance (see my second treatise, "Zur Entzifferung der Mayahandschriften", pages 14 to 17).

The example directly preceding also corresponds admirably. It forms the eleventh and twelfth dates and the eleventh intervening period.

S 10 T 10: XI 5; 6, 6th month. (11 Kan.)
S 12 T 12: 9+3×20+13×360=4,749.
S 14 T 14: II 14; 10, 6th month. (11 Muluc.)

The space between the two dates is actually 4,749=18×260+69=13×365+4. And 69 is in fact the distance from XI 5 to II 14, 4 the distance from 6, 6th month to 10, 6th month.

In addition, I would mention the second and third dates and the second period:

D 3 C 4: IV 17; 8, 18th month. (9 Ix.)
D 5 C 6: 2+9×20+360=542.
C 9 D 9: XIII 19; 20, 8th month. (11 Kan.)

It should be noticed here that an affix is attached to the sign for 360, C 6, which seems to me to denote the close of this period and to prevent the next sign D 6 from being added to it. Moreover, D 9 probably denotes the eighth month; but its prefix, according to my supposition, only denotes the close of the month.

Now, 542=2×260+22=365+177. The day IV 17, actually precedes the day XIII 19 by just 22 days. But the day 8, 18th month is distant 177 days from 20, 8th month of the following year, and therefore distant 365+177=542 days from the same day 2 years later.

A most singular error results if the dates 17 and 18 are compared with the intervening period 17. The inscription here reads as follows:

X 5 W 6: II 18; 4, 12th month. (1 Cauac.)
X 6 W 7: 1+20+360=381.
X 10 W 11: VII 1; 17, 8th month. (8 Muluc.)

Now, II 18 to VII 1=83; and 4, 12th month to 17, 8th month=298. The sum of the two numbers is 381, which is recorded as the interval of time between them, while in reality the two dates are separated by 16,723=45×365+298 or 64×260+83. It is plain therefore that the characters were engraved on the stone before the computation was completed.

In one instance the month seems to be omitted. This occurs in F 9, in the date which ends a period in the inscription. I here combine the starting point of the whole computation with the sixth date:

A 16 B 16: I 17; 18, 17th month. (3 Kan.)
E F 5 and 6: 2+11×20+7×360+1×7,200+2×144,000=297,942.
E 9: IX 19; completed, 15, 4th month. (1 Muluc.)

If, since after 18,980 (52×365) days, the dates have the same position in the year, 15×18,980=284,700 is subtracted from 297,942, 13,242 days remain. But 13,242=50×260+242=36×365+102. And the time from I 17 to IX 19 is actually 242; from 18, 17th month to 15, 4th month, 102 days; I therefore believe that it is not venturing too much thus to complete the date.

The passage F 6, moreover, is the only one in the inscription where a multiple of 144,000 really follows the sign for 7,200, as would be expected. Such a multiple of 144,000, indeed, occurs three more times, but in C 5 it is 8×144,000, and here it stands directly before the period beginning with the single days, while in U 2 and V 12 we have nine times and five times this number, but separated in each case from the succeeding period by a glyph (V 2 and U 13, differing from each other). Here is a problem to be solved in the future.

An attempt, however, with the sign U 2 seems to be successful. Let us compare the thirteenth with the fourteenth date:

T 17 U 1: VIII 17; 13, 12th month. (11 Muluc.)
U 2 U V 3 U 4: 9×144,000+18+20+8×360+1×7,200=1,306,118.
U 7 V 7: III 15; 16, 1st month? (2 Kan.)

That the indistinct last sign denotes the first month is, of course, only a conjecture; also that a line is lacking in the number 11 standing before it. If it is correct then everything agrees, for 1,306,118—

$68\times18{,}980=15{,}478$, but this equals $59\times260+138=42\times365+148$. From VIII 17 to III 15 is 138; from 13, 12th month to 16, 1st month is 148.

In another case, where I combine the fourth and fifth dates with the fourth period, I must hazard two conjectures. First, it seems to me that in D 11 the actual starting point of Maya chronology, the eighth day of the eighteenth month, is not designated by the same sign as in C 4, but instead by the old god (Izamna), the lord of the day 17 standing beside it; and, second, I believe that the indistinct prefix of D 13 is to be read as 2. These postulates being accepted, we have the following result:

C 11 D 11: X 17; 8, 18th month. (2 Ix.)
D 13, C 14 D 14: $2+12\times20+3\times360+18\times7{,}200=130{,}922$.
E 1 F 1: IX 19; 15, 12th month. (10 Muluc.)

If the number $113{,}880=6\times18{,}980$ is subtracted from 130,922, there are left 17,042 days$=65\times260+142=46\times365+252$, and 142 is the interval between X 17 and IX 19, while 252 is the interval between 8, 18th month and 15, 12th month.

Perhaps it is also worthy of notice here that, if 20 years (20×365) are subtracted from 17,042, 9,742 days remain, which we recognized as a recurrent and very remarkable number in the last part of the Dresden codex (see Zur Entzifferung der Mayahandschriften, II, pages 16 and 18).

This number, 9,742, results still more directly if the second date is combined with the fifth date just now under discussion:

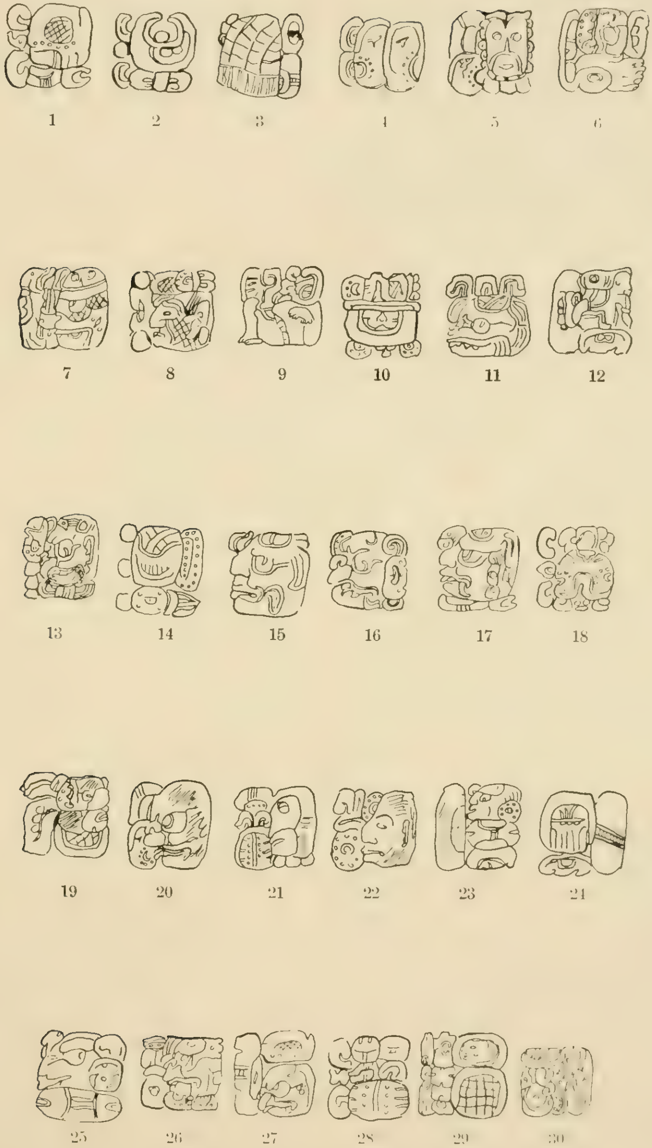
D 3 C 4: IV 17; 8, 18th month. (9 Ix.)
E 1 F 1: IX 19; 15, 12th month. (10 Muluc.)

The two dates are indeed separated by $9{,}742=27\times365—113$ days, for 9,742 equals $37\times260+122=26\times365+252$; but there are in fact 122 days between IV 17 and IX 19, and 252 days between 8, 18th month and 15, 12th month. It is remarkable that this period of 9,742 days does not seem to be expressed anywhere on the inscription; perhaps it is denoted by a character still unknown.

These examples will suffice to point out the way along which further investigation, not merely of this but of other Maya inscriptions, must be pursued. And I have reasons for desiring an early successor in this work.

We have seen that as a rule each date is connected with the one immediately preceding it, for I could proceed from the dates 1, 2, 4, 11, 12, 13, and 17 directly to 2, 3, 5, 12, 13, 14, and 18. But I have made a jump only from 1 and 2 to 6 and 5, though I will mention also that I have jumped from 1 to 7 for my own satisfaction, apparently not incorrectly.

It appears, therefore, that a more or less direct reference to the starting points of the whole computation occurs in the three dates of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GLYPHS FROM THE TEMPLE OF INSCPIPTIONS AT PALENQUE

columns E and F. And these three days are peculiar in that they all three (E 1, E 9, and F 12) proceed from the same day, IX 19. How may this be accounted for?

I now add an observation in which Cyrus Thomas has led the way. In nine passages of the inscription we find two unknown glyphs, the same ones each time in immediate succession: F 7 E 8, S and T 1, T 7 S 8, T 15 S 16, U and V 6, V 11 U 12, U and V 16, W and X 3, and W and X 17. Six times this pair of signs occurs between the interval and the following date; in U 6 V 6 it occurs between two dates, in V 11 U 12 between the date and the following interval, in W X 17 at the end of the whole inscription after an interval. The characteristic of the first sign is a hand pointing forward, that of the second, a kin ("sun", "day"); accordingly, they may perhaps mean nothing more than "counting of the days". The sense must be very general, otherwise it would not occur in nine places.

THE DAY GODS OF THE MAYAS

BY

E. FÖRSTEMANN

THE DAY GODS OF THE MAYAS[a]

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To assign to each day a certain god as a ruler or protector is a widespread custom, a trace of which is still perceptible in Europe to-day, inasmuch as we still call our week days after heathen deities.

This custom also prevailed in the domain of Aztec and Maya culture. With regard to its practice among the Aztecs, Doctor Seler, in particular, has given us considerable information in the Compte rendu of the Berlin Americanist Congress of 1888 in his great treatise on the Aubin Tonalamatl. In reference to the Mayas, this scholar says in his treatise on the names of the Maya gods represented in the Dresden manuscript (1887), page 230, that it appears from the old Relacion of the Priest Hernandez (which I am unable to consult) that Cukulcan was the chief of the 20 gods, who, according to the description, clearly denoted the deities of the 20 day signs.

Many names and glyphs of Maya and Aztec gods combined with numbers always refer to certain specified days not in the series of 20 but in that of the 260 days of the tonalamatl, especially those of the Mayas beginning with Hun (1), and those of the Aztecs beginning with Macuil (5).

From the account of Nuñez de la Vega, as well as from that of Francisco Fernandez, whose narrative is preserved by Bartholome de las Casas, it appears that, generally speaking, the 20 days were each dedicated to a god or lord.

Such day gods have been handed down to us from certain parts of the country, not only in a general way, but special ones for special days.

Thus it is said of the first day, Kan, that among the Tzentals in Chiapas and Tabasco (who, by the way, were the probable authors of the monuments of Palenque and of the Dresden manuscript) this day had been called Ghanan, and Ghanan had been a divinity in those localities (see Brinton, Mayan Hieroglyphs, pages 62, 123).

The fifth day, Lamat, is designated among the Kiche-Cakchikels in Guatemala by Kanel, a deity of seed sowing (see below).

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[a] Globus, v. 73, n. 8 and 9, 1898.

The sixth day, Muluc (we are calling the days according to Landa, that is, according to the usage of northwestern Yucatan), is called Toh in Kiche, after the god of thunderstorms (see Brinton, Calendar of Central America and Mexico, 1893, page 27).

The sixteenth day, Cauac, was called Ayotl, "tortoise" (Brinton, Calendar, page 33), by the Pipiles, an Aztec tribe, it is true, but living among Maya tribes, and among the Mayas the tortoise belongs to the mythic animals, which rank in order with the actual gods.

The seventeenth day, Ahau, is called in the Kiche and Cakchikel Hunahpu, the one lord of power, from which the name for the day Ahau (Brinton, Calendar, page 22) has obviously been derived.

As patron of the eighteenth day, Imix, Ek-chuah, a black god, the god of cacao planters, travelers, and merchants, is mentioned (see Seler, Charakter der aztekischen und der Mayahandschriften, 1888, pages 6 and 44; Brasseur de Bourbourg, Histoire des nations civilisées du Mexique et de l'Amérique centrale, volume 2 (1888), pages 43 and 44).

Lastly, the twentieth day, Akbal, is called by the Tzentals Votan, "the heart", a well-known deity, corresponding to the Aztec Tepeyollotl (Brinton, Calendar, page 24).

The above are detached fragments of the system of the Maya day gods. But we are now able to see our way more clearly to the reconstruction of this system, inasmuch as the second revised edition of Die Göttergestalten der Mayahandschriften, by Paul Schellhas, has just been issued (Dresden codex, 1897, by Richard Bertling). In this work the distinguished author as far as possible separates the individual gods according to the pictures and the written designation. Furnished with such aids, we will now proceed to join each one of the 20 days in their order (*g* to *aa*, figure 112) to the respective deities, ignoring everything on the right and left of our path which does not further this end.

1. Kan, *g*. Brinton, Calendar, page 24, also gives Kanan, which seems to me to be the more primitive form, for kan means yellow and ripe, and kanan (derived from it) is probably the yellow maize kernel after it has become ripe. The Tzental form for the day, Ghanan, corresponds to this, for in the Tzental vocabulary of Pater Lara, ghan is the maize ear (see Brinton's Primer, pages 62, 123). The Aztec meaning of the day name does not concern us, but among the Nahuas of Meztitlan the day is actually called Xilotl, "ear of corn" (see Brinton, Calendar, page 25).

Hence it is safe to assume that E is the deity belonging to this day, in whose picture we plainly see the kan symbol, which is itself nothing but a maize kernel, and the sprouting maize plant (see Schellhas, Göttergestalten, page 19).

2. Chicchan, *h*. Chic means great, and chan in Tzental, can in Cakchikel, means serpent; the last syllable of Cukulcan has likewise the same significance. The Aztec name for the day, Coatl, also signifies serpent. The first part of Chicchan, however, might be chii ("to bite, to sting"). The glyph is a head about whose temples is wound a row of small circles like a string of pearls, and according to Schellhas, Göttergestalten, page 23, the divinity H, the serpent god has the same pretty decoration, which has long been regarded as signifying a serpent's skin.

3. Cimi, *i*. The meaning of cimi is death; the Aztec name for the day, Miquiztli, and the Kiche-Cakchikel, Camey, likewise have the same significance.

Accordingly there can be no doubt that the divinity A belongs to this day, especially as the glyph and the picture resemble each other. Whether the bird Moan, as a special representation of A, also belongs to this day, I must leave undecided for the present, but I will return to the subject later.

4. Manik, *k*. We know no more about a satisfactory meaning for this word than we do for the Tzental Moxic. On the other hand, the day name in Nahuatl, Mazatl, in Zapotec, China, and in Kiche-Cakchikel, Queh, denotes in each case deer (Brinton, Calendar, page 26).

The glyph signifies a hand in the act of grasping, as in the character for the east, where the hand (as it were) draws up the sun which lies below it.

To the deer as well as to this hand, a hunting god would be most appropriate, in connection with which we particularly recall Codex Troano-Cortesianus, in which there is such great prominence given to the deer hunt (with snares, traps, and spears) that an entire section is devoted to the subject. But thus far the picture of a god suitable for a hunting god has not been found, although there is no lack of names of gods of the chase both among the Mayas and among the Aztecs. I think that one of the various forms under which F is represented might possibly apply here, especially as F is regarded as a death god, who perhaps is meant to denote a violent death by sacrifice or at the hands of a hunter.

5. Lamat, *l*. Without doubt the Tzental Lambat is a purer form, which Brinton, Calendar, page 27, interprets as derived from lam, "to sink in", "to sink beneath", and from Bat, which means both the grain, the seed, and a mattock for working the ground. The Aztec designation for this day, Tochtli, "rabbit", might convey the idea of the animal as a symbol of fertility or even as destroyer of the crop. The glyph perhaps denotes the furrows or holes for the reception of the seed.

We might, but only perhaps, look here for a grain god, particularly as in Kiche-Cakchikel among the inhabitants of Ixtlavacan in Guatemala, the name of the day, Kanel, designates a deity of seed-sowing, to whom sacrifices were performed on this day (Scherzer in Boletin de la Sociedad Economica de Guatemala, December 15, 1870).

The picture of a deity of seed-sowing, however, has not yet been discovered in Maya literature, although this action is represented several times in the manuscripts.

6. Muluc, *m*. This word, to which Mulu, or Molo, in Tzental corresponds, might be derived from muyal, "clouds" (Stoll, Ethnographie von Guatemala, page 59), and this may be connected with mul, "to heap up". Among the Zapotecs the day is called Niza, or Queza, "water"; in Kiche-Cakchikel, Toh. Toh, however, signifies the god of thunderstorms. To this the Aztec Atl also corresponds and the Quiahuitl of the Pipiles, water or rain.

The glyph is doubtful. It is either the firmament with a cloud in the center, or a sheet of water with an islet rising out of it. With this I place the deity K, blowing from his enormously exaggerated nose, therefore probably denoting the storm god.

7. Oc, *n*. The meaning, foot, which this word has among the Mayas, is of no use to us. But perhaps it is useful to know that according to Stoll, Ethnographie von Guatemala, among two Maya tribes, the Tzotzils in Chiapas and the Chañabal in the north of Guatemala, the wild dog (coyote) is called ohil, from which this word Oc may have been derived. Now, this day has the name Tzi with the Kiche-Cakchikels, and with the Aztecs, Itzcuintli, both meaning dog; the Zapotec name, Tella, is said, according to Bartolomäus of Pisa (Brinton, Calendar, page 28), to mean the same. But the dog occurs in mythology as the lightning beast, in which character it frequently and distinctly occurs in the manuscripts (Schellhas, Göttergestalten, page 30).

The glyph occurs in manifold forms, which have in common several zigzag lines (for example, in the books of Chilam Balam), and which might very well signify lightning.

8. Chuen, *o*. In Tzental and Kiche-Cakchikel, this day is called Batz, in Nahuatl, Ozomatli, and both mean monkey. It denotes a particular species of monkey, Tzental, according to Lara (Brinton, Calendar, page 28). Chiu, and perhaps Chuen, the meaning of which is otherwise unknown, is connected with it.

The glyph shows a gaping jaw, which Seler likewise ascribes to a monkey, but Schellhas to a serpent. I do not venture to decide the matter.

The figure of the deity C belonging here displays, as does also its glyph, peculiar lines about the mouth and nose, which suggest a monkey's skull and even look like the lateral nasal aperture of the

American monkey. This Schellhas has recognized as a deity of the north. We assume, therefore, that the Little Bear is conceived of as a monkey which holds fast with its prehensile tail to the pole and swings about the latter.

9. Eb, *p*. This Maya word is doubtless connected with the Euob of the Tzentals and the E, or Ee, of the Kiche-Cakchikels. Like the Pija of the Zapotecs and the Malinalli of the Aztecs, it signifies a combination of points, spines, or thorns, a row of teeth, stiff varieties of grass, and the brushes or brooms made of them.

The glyph of this day is a head, and therefore, no doubt, a deity. By the side of the eye and the nose are seen either two lines running from the top downward or, carried out more in detail, a row of many dots like spines around these lines, so that the whole is not unlike a broom, as in Landa and often in the manuscripts.

What deity is denoted here we can not yet positively determine. We must expect to find similar marking on its face. In connection with day 4 (Manik) we have already alluded to the various kinds of lines on the face of the god F. Here, too, the deity we are in search of may easily have been confounded with the forms supposed to represent the god F. I recall, for instance, the figure drawn on the left at the top of page 5 of the Dresden codex, in which two glyphs are unfortunately destroyed. It should also be remembered that among the Mayas the cleansing of the dwellings for the feasts was a prescribed ritual act. We are reminded of the herba verbenaca used by the Romans at the lustratio.

10. Ben, *q*. The meaning of reed, rush, or straw belongs to Acatl in Aztec, to Quii or Laa in Zapotec, and to Ah in Kiche and Cakchikel. The significance of Ben in Maya and Tzental is unknown, but caghben in Tzental means dried cornstalk (Brinton, Calendar, page 30).

The Aztec glyph, as usual, is very distinct. In the Maya glyph there are several straight lines at right angles to each other. The most probable meaning of this is a roof made of reeds or rushes, and this opinion Doctor Schellhas expressed to me in a letter years ago. It may possibly refer to the Kiche god Chahalhuc, the god of dwellings (see Stoll, Ethnographie der Indianerstämme von Guatemala in the Internationales Archiv für Ethnographie, 1889). But it is more likely to refer to the Aztec patron of this day, Itztlaliuhqui, who is given as the god of coolness and of drought, also of sin. It reminds us that the roof is a protection from sun heat and pouring rain, and hides secret sin from view; for were not adulterers stoned before the image of this particular god? I am far, however, from wishing that this train of thought should be regarded in the light of an assertion. After the explanation above written Professor Brinton sent me his interesting work, The Pillars of Ben, but I must here confine myself to referring simply to it, especially as it really contains nothing that contradicts my view.

11. Ix, *r*. In Aztec this day is called Ocelotl; in Zapotec, Eche; in Kiche and Cakchikel, Balam. All these mean the jaguar. The Kiche, however, has also the word Hix for it, which is the same in Tzental. The Maya word is written Ix, Gix, Hix, and means the sorcerer. But jaguar and sorcerer are actually synonyms, for to the latter the power is ascribed of transforming himself into the former, and the verb balam in Kiche denotes precisely this transformation (Brinton, Calendar, page 30).

The Maya glyph with its two lines and three dots, therefore, seems plainly to denote the striped and spotted jaguar skin, which possibly is a symbol of the starry heavens (a more detailed account is given in Brinton's Calendar, page 56). Ocelotl among the Nahuas is specifically the designation of the Great Bear, as Ozomatli, the eighth day, is that of the Little Bear. But the deity belonging to it is actually represented among the Mayas by a jaguar (Schellhas, Göttergestalten, page 31). In the Dresden codex, page 26a, at the end of the Ix year, the priest carries away the image of the jaguar.

12. Men, *s*. The Tzental and Kiche-Cakchikel word Tziquin means bird, the Aztec, Quauhtli, specifically the eagle. Now, the bird among Central American peoples is the symbol of knowledge and of wisdom, as the owl was among the Athenians. In harmony with such a view this day is called Naa by the Zapotecs, as it is called Men by the Mayas, both meaning knowledge and understanding, Ah-men, " the wise one ".

The glyph is a head. Below the eyes are various markings which might very well mean bird's feathers. Doctor Seler has been at various times reminded of the Aztec goddess, Tonantzin, the great earth mother who is adorned with eagle's feathers.

Among the mythical birds of the Mayas the most important is the Moan (Schellhas, Göttergestalten, page 29), which occurs often in their glyphs, and which denotes a month of the year. In Globus, volume 65, number 15 (1894), I have considered whether Moan is the sign of the Pleiades. This suggestion may be of use in connection with this day, but I do not ascribe much importance to the fact that the consonants agree in Moan and Men.

13. Cib, *t*. The Aztec Cozcaquauhtli means the vulture, literally the king vulture, named after its feather ornament. The Tecolotl of the Pipiles means the owl. The Zapotec Loo, or Guil-loo, seems also to denote a bird, for ba-loo denotes crow or raven. The meaning of the Maya word Cib and of the Tzental Chabin is very uncertain (Brinton, Calendar, page 31); but that the Mayas actually regarded the vulture as the symbol of the deity of this day is confirmed below (see Schellhas, Göttergestalten, page 31).

The glyph shows a line winding from below upward, on the upper end of which there is a small round object. I do not consider it impossible that this may indicate a bird mounting into the air.

14. Caban, *u*. I connect this word with cab, to which Perez in his lexicon gives the meaning of earth, world, soil. At the first glance the Aztec Ollin does not seem to correspond to it at all, because the idea of movement attaches to Ollin and particularly the movement of the sun; but when we find that the Meztitlan expression, Nahui Olli means the four movements given for this day in Brinton's Calendar, page 32, and read " directions " rather than " movements ", the riddle is solved, for it means the four cardinal points surrounding the world. I must leave it to the future to reconcile this meaning with the Tzental Chic, the Kiche-Cakchikel Noh, and the Zapotec Xoo, to which the meaning of great, firm. powerful is ascribed. Can these be the designations for the gods of the four cardinal points, the Bacabs?

The form of the Aztec glyph accords with my supposition. Around a central design in which, without too much imagination, one can see a suggestion of the earth, the ocean, and the surrounding atmosphere, figures in the form of sails of a windmill extend in four directions. We are here strongly reminded of the representation in Codex Cortesianus, pages 41 to 42, which Léon de Rosny not inappropriately has called a tableau des Bacabs; that is, of the four deities of the cardinal points. It is a tonalamatl in which, from a central inclosure, half of it rectangular and half circular, four figures representing the separate days project in as many directions.

The Maya glyph unquestionably denotes the ground. I here quote the words of Schellhas (Die Mayahandschrift der Königlichen Bibliothek zu Dresden, 1886, page 21):

> The sign is the symbol of land, the ground, the earth, which is called cab in Maya. Numerous pictures of persons and objects, which sit, lie, and stand on this sign, and especially its frequent occurrence as ground and foundation in the representations, confirms the signification of the word. Thus the sign cab occurs especially in the Troano codex, frequently also the sign Kan, as a symbolic glyph of the fruitful earth from which maize stalks are sprouting (Troano codex, page 33). In another passage (Troano codex, page 32) there are vines, twining about a pole, on the sign Caban.

Yet, notwithstanding all those assured points, it is difficult to interpret the form of the Maya glyph. It includes the same spiral line terminating in a small round object at the top which we saw in the preceding day Cib and interpreted as a soaring bird. In addition, it contains a second small object, from which a straight dotted line runs downward. Can this be an indication of two directions, up and down? This explanation does not altogether satisfy me. We shall therefore be forced to regard the four Bacabs as the gods of this day.

15. Ezanab, *v*. The Aztec Tecpatl is flint, such as is used for

knives and lance heads. To this corresponds the Tzental Chinax, an old form for the usual zninax, "knife". The Cakchikel Tihax is said to mean biting, scratching, while in the Zapotec Gopaa Brinton (Calendar, page 32) surmises a variant of guipa, "sharp point, edge" (gueza-guipa, "flint knife"). The Maya word Ezanab, Brinton, in the same work, connects with edz, "to stab, to sharpen", and nab, something stained, especially with blood. In fact the lance heads repeatedly appear bloodstained in the manuscripts.

The glyph consists of two intersecting zigzag lines, which are also repeated on the lance heads. These lines reproduce very well the jagged slanting lines of a flint knife (Schellhas, Mayahandschrift, page 22).

It is difficult to find an appropriate deity for this sign. For the present I am inclined to consider in connection with it one of the serpent deities (Schellhas, H and I), so difficult to distinguish, one of which belongs to the second day. The wound made by stabbing or cutting could be conceived of as a serpent's bite. All this is very uncertain, but I hope later to bring forward more arguments in support of my opinion.

16. Cauac, *w*. In this sign I see the rainy season, the time of the greatest heat and most frequent thunderstorms. The Maya word is exactly equivalent to the Tzental Cahogh (chaoc), the Pokonchi and Pokoman Cahoc (cohoc), and the Chontal Chauoc, which all mean thunderstorm. Even the remote Huastec has the same word in its tzoc. The Zapotec Ape (api), properly dark cloud; in the compounds laari-api-niza and ri-api-laha, signifies lightning (Brinton, Calendar, page 33). In the Aztec the name of this day is Quiahuitl, equivalent to rain.

The glyph, which distinctly includes a mass of clouds, corresponds very well to the above.

The language of the remote Aztec Pipiles shows us how to find the god belonging to the day. In this language the day is called Ayotl, "the tortoise", which is a symbol of the thunderstorm deity, as Schellhas has already stated in the Zeitschrift für Ethnologie, 1892, page 120, and also in his latest work, page 31. I myself have principally demonstrated in my third treatise, "Zur Entzifferung", that the tortoise signifies the summer solstice, the climax of the season of rain and thunderstorms. Add to this that among the Mayas cooc, or caoc, denotes the lightning, and coc the tortoise, and it seems probable that the resemblance of the word may have influenced the selection of the symbol. . Indeed, it may be thought that the Yucatec rain god Chac is the same word as cauac, caoc, or cahogh. Even to-day chaac (chac) is used in the sense of rain.

17. Ahau, *x*. Literally "lord of the necklace", as the ornament marking a distinguished rank. From this the name of the day

Aghual, "lordship", is derived in the Tzental. In the Kiche-Cakchikel it is called outright by the name of the god Hun-ahpu, "the one lord of power", in Zapotec Lao, or Loo, "the eye", which means the eye of the day, the sun, as the Mayas have the god name Kin-ich-ahau, "lord of the eye of the day". And the Aztec Xochitl, "flower", is also explained by the xochitonal of the dialect of Meztitlan, "the flower of the day, the sun" (Brinton, Calendar, page 34).

The glyph displays a face which differs from the other heads, inasmuch as it is seen from in front, and its eye forms the symbol of the moon, while an akbal (night) is placed on the forehead. The god belonging here is doubtless the old god D, to whose glyph the sign Ahau is usually added as a determinative. The close relation of this god to the sun is probably the reason why there no longer seems to be a vacant place for the sun god proper, which in all probability he originally occupied, as we shall see directly. The question now arises, Is the close relation of god D to the moon among the Mayas an innovation or is it the most ancient relation? The moon is the nearer, the sun the more remote, lord of time and of the whole chronology.

18. Imix, *y*. In the course of time the meaning of Imix has undergone two changes which have rendered the interpretation very difficult. It may be assumed that among the Mayas, mex, or meex, means the beard, which doubtless suggests primarily the sun's beard (u mex kin), that is, the sun's rays (Brinton, Calendar, page 23). This is very appropriate to the day, which was placed at the head of the day series by the Aztecs and by various Maya races. Mex, however, is also the name of the cuttlefish, from whose head extend eight or ten raylike arms (un pescado que tiene muchos brazos), and it may be the oldest hieroglyphic designation of the day.

But the little-known cuttlefish, when the original connection was forgotten, was replaced by another aquatic creature. Among the Zapotecs the day was called Chiylla, "water lizard". In the Nahuatl it was Cipactli, which is applied to an undefined aquatic creature. The Aztec glyph is an alligator. Secondarily, the process which Brinton calls ikonomatic began at this point. Instead of Mex, the Mayas used Imix as the designation of this day; the Tzentals used Imox, or Mox. The Kiches and Cakchikels have Imox, or Moxin, which in their language, according to Ximenes, also denotes the swordfish, and this facilitates the transition of the meaning. Im signifies udder or the female breast, while ix is a frequent prefix or suffix, denoting the feminine gender. Here it should be observed that milk is denoted by cab-in, "honey of the breast". Then, in this connection, we are reminded that the intoxicating pulque was obtained from honey, and that numerous pulque gods occur among the Aztecs and Mayas. The gathering of honey was a prominent industry, as is shown by the large section devoted to it in Codex Troano-Cortesianus. The frequent combination of the signs kan and imix (with water and pipes as affixes) seems to signify food and drink, a meal, a banquet. They occur almost exclusively in the tonalamatl, and not in the astronomic representations. The Maya glyph unquestionably denotes a female breast.

All this seems, therefore, to point to a deity of the honey industry or of pulque. Schellhas has not yet discovered such a god, but I hope to find one farther on.

I must call attention to the fact that, first by Brasseur de Bourbourg, then by Seler and others, a black god, Ek-chuah, is mentioned as patron of the day Imix, as protector of cacao planters, travelers, and merchants. Yet I avoid connecting this god by a factitious train of thought with the desired pulque god, and leave the question open for the future.

19. Ik, *z*. The Maya word ik is the same as the igh of the Tzentals and the ik of the Kiches and Cakchikels, and corresponds in meaning also to the Aztec Ehecatl. Owing to this agreement it is unnecessary for my purpose to examine the various Zapotec expressions for this day. But the common meaning is that of wind, breath, air (in the pictorial representations also that of fire, as a particular kind of air), then, figuratively, that of life and spirit.

The glyph of the day has various forms. The most primitive appears to me to be the rectilinear one, as it occurs particularly in the inscriptions, and also in the eye included in the glyph of the god. The day series of the tonalamatl readily suggest a burning torch or candle, but this rectilinear shape reminds one of the tree of life or of the sacrificial tree. In addition to this other forms occur, which are entirely unintelligible to me (see, for example, Brinton, Essays of an Americanist, page 271).

The deity of the day is decidedly god B, Cukulcan, or Quetzalcoatl, the bird-serpent, this most universal and most diversely busy god of the Mayas, especially of the Tzentals. In place of the eye this glyph displays the rectilinear figure of ik, which alone is conclusive. The picture of the god itself may, by the long nose, have reference to breath, just as god K, by his ornamental nose, denotes the blast of the storm.

20. Akbal, *aa*. In Kiche-Cakchikel this day is called by the same name. It means darkness, night, like the Zapotec Guela. In Nahuatl we have Calli, "the house", probably in the sense of an abode for the night and on account of the darkness prevailing within it. In Tzental the day is called Votan, after the demigod, the so-called "heart of the nation", who built a dark house in Tlazolayan for the sacred objects of his cult. He answers to the Aztec Tepeyollotl

(Seler in the Compte rendu des Berliner Kongresses, pages 561 to 569).

The Aztec glyph of the day distinctly designates a house, while that of the Mayas is still unintelligible to me. Seler (Berliner Kongress, page 562) sees in this a representation of the mountain cavern, the jaws of the earth. This deity we shall probably find in the black god whom Schellhas has denoted by L.

I am unable to discover a methodic arrangement in the significance of the 20 days or in the gods belonging to them. When Brinton in his calendar undertakes to construct an organic order of the day names I am not able to follow him.

It is plain that in this grouping of the gods with the days, along with much that is certain, there is also much that is doubtful, but I believe that I am in a position to find confirmation of my opinions in another direction. My hope rests, first of all, on the unique tonalamatl of the Dresden codex, pages 4a to 10a, which in the customary manner treats the first 52 days more in detail, but specifically divides them into 20 different parts, which occurs in no other tonalamatl. One is therefore involuntarily led to ask whether a relation may not be discovered between these small time periods and the 20 days. At first glance the answer to this question is in the negative. The tonalamatl has as its zero point the day Imix, *y;* but if, proceeding from this point, we attempt to prove the divisions of time recorded in the manuscript and the representations concluding them, then the day found in no case corresponds with the pictures and their glyphs.

It is quite a different matter if we assume that the zero point was mistakenly placed at Imix, *y*, by the scribe, instead of five days earlier at Cib, *t*, where it should be. He seems to have placed the tonalamatl of a certain year on the same days of the next year, without reflecting that they ought to be moved forward five days. This supposition seems to me to become a certainty through the following statement.

If we proceed from the day 13 (Cib, *t*) the intervals of one, two, three, or four days will give at the close the following days of the 20 sections:

1	15 Ezanab	11	2 Chicchan
2	19 Ik	12	6 Muluc
3	3 Cimi	13	8 Chuen
4	4 Manik	14	11 Ix
5	8 Chuen	15	13 Cib
6	10 Ben	16	16 Cauac
7	12 Men	17	18 Imix
8	16 Cauac	18	1 Kan
9	18 Imix	19	3 Cimi
10	20 Akbal	20	5 Lamat

Thus it appears that there was no attempt made to have all the 20 days represented, for the days 3, 8, 16, and 18 occur a second time after 20 or 40 days, while, on the other hand, the days 7, 9, 14, and 17 are missing. Now let us see how the groups consisting each of a picture and six glyphs (of which the first two are always the same) agree with the days found by calculation.

1. Ezanab, *e*. We find here an actual serpent god (H or I) holding a serpent in its hand, and in the third and fourth glyphs, with slight variations, the symbols of the other serpent god belonging to the day Chicchan, *h*. The deity as an ear ornament distinctly wears the sign ezanab. Here everything corresponds.

2. Ik, *z*. This is the actual god B. His sign is also in the fourth glyph. If the object held in his hand is intended for a bird, it would be a symbol of wind. This also agrees.

3. Cimi, *i*. We expect to find the god A here, but we find another, probably N. Unfortunately the destruction of the glyph has rendered a critical examination difficult. We can not, therefore, prove an agreement.

4. Manik, *k*. Here we plainly have one of the forms of god F, but the difficulty of arriving at a decision in reference to this god, as well as the obliteration of the glyphs, prevents us from definitely placing this group among those which show a satisfactory agreement.

5. Chuen, *o*. The picture of god C, as well as his glyph, accords admirably with my view.

6. Ben, *q*. Here, it is true, one of the common Ben-Ik signs is found among the glyphs, but below it is again the deity B. We must here defer a final decision.

7. Men, *s*. This is a sign which belongs to the sought-for Moan, but the picture is probably another form of god F, with the nose peg of the sun god G. It is true the Moan is connected with the position of the sun, but that is not sufficient to constitute a positive agreement here.

8. Cauac, *w*. The sought-for tortoise does not occur here, unless we are inclined to consider the object which the god holds in his hand as such. Among the glyphs the two central ones which belong to the serpent god H are noticeable, and they agree tolerably well with the rainy season and thunderstorms. A proof of positive correspondence, however, does not appear.

9. Imix, *y*. The deity is feminine, as is appropriate to this day. This is shown by the tresses displayed before the third and fifth glyphs. But she appears to be one of the forms of god F, which is indicated by the death sign on her cheek. I do not venture to explain what she holds in her hand or the serpent on her head. The matter, therefore, remains undecided.

10. Akbal, *aa*. The black god L, as well as the traces still left of the third glyph, correspond to the idea of darkness conjectured here.

And since Akbal is one of the days with which the months in the Kan year begin, the sixth glyph, ahau, also agrees.

11. Chicchan, *h*. The dog with his glyphs certainly does not agree with this, since we expect a serpent god here. Yet it is curious that the last two glyphs are the same, only in reversed order, as the last two in group 1, which certainly belongs to a serpent god. The question remains undecided.

12. Muluc, *m*. Here the divinity K corresponds admirably in the picture and the two central glyphs. The fifth glyph shows the day as one of the regents of the year.

13. Chuen, *o*. Here there is no agreement, since the picture represents god A, and the glyphs are his.

14. Ix, *r*. Nothing can better correspond to this day than the picture of the jaguar and his glyph occupying the third place.

15. Cib, *t*. Here, too, as in the preceding group, the picture and third glyph agree, both denoting the vulture. The fifth, on the other hand, represents the lightning dog, in relation to which it is curiously fitting that on page 13c vulture and dog are combined in one group.

These two groups, 14 and 15, separated by two days, like jaguar and vulture in the Aztec calendar, seem to me by themselves quite a convincing proof of the connection of this tonalamatl with the days. They formed the basis of my hypothesis.

16. Cauac, *w*. Here we find nothing that we expected, but in its stead the god D and the ahau sign, almost always accompanying him, in the fourth place, the third glyph being unfortunately destroyed. We are, therefore, led to assume, not with certainty, but with great probability, that an error of one day has been made here by the writer. It should be the day 17 (Ahau), for otherwise the chief of all the gods would be missing. The number of days wanting in these 20 groups and of those appearing twice is, therefore, reduced to three (7, 9, and 14 and 3, 8, and 18).

17. Imix, *y*. Corresponding to the day, the picture shows a female deity who in two things agrees very well with what was remarked above, in the bee sitting on her head and in the bandaged eyes, which I believe, as well as the uncertain position of the hands (or do I see too much here?), indicate intoxication from drinking pulque.

18. Kan, *q*. The sought-for grain goddess E, with her glyph; is actually found here.

19. Cimi, *i*. This is not the expected deity A, but the closely related figure of the Moan, having the death symbol on his head, and his glyphs, thus entirely suitable to the day.

20. Lamat, *l*. Nothing corresponds to this day, but god A occurs with his glyph, perhaps not through error, but intentionally. The fourth glyph is very remarkable. In it I am very much inclined to see a time period, 6 lunar months and 6 days, that is, 6×28+6, or a

space of 174 days; yet I hesitate to express the conjecture which I entertain relative to this subject, for it does not pertain to my present theme.

Among the twenty groups, therefore, ten (1, 2. 5, 10, 12, 14, 15, 17, 18, 19) agree very well with my view, corroborating it in part, while an eleventh (16) will as well if we accept a slight conjecture.

After this result the question naturally arises whether in the remaining tonalamatls of the manuscripts the pictures and glyphs correspond to the intervals of the days. Such cases are readily found: In the Dresden codex, page 15c, D appears 14 days after A (3 to 17); page 13b, C, 7 days after E (1 to 8); page 16b, A, 4 days after B (19 to 3). But still more cases must be found to form a conclusive proof, as isolated cases can readily be ascribed to mere accident. This is a question upon which I will not touch at present.

THE TEMPLE OF INSCRIPTIONS AT PALENQUE

BY

E. FÖRSTEMANN

THE TEMPLE OF INSCRIPTIONS AT PALENQUE[a]

By E. Förstemann

We have perforce confined our efforts from the beginning of Maya research chiefly to the manuscripts, in the interpretation of which considerable progress has already been made. The time has now come to take the first steps toward a decipherment of the Maya inscriptions. Available copies of the inscriptions were until recently too inaccurate to offer an incentive to thorough study. My treatise, Die Kreuzinschrift von Palenque, published in Globus, volume 72, pages 45 to 49, might therefore be called premature, since my only guide, at least, for the left side of the inscription, was the drawing by Catherwood in Stephens's book of travels. This drawing is admirably executed, it is true, but it is inadequate for accurate research. I use the word "premature", however, only in reference to a few details upon which fuller light has now been shed; I certainly comprehended correctly the main point, namely, the fact that the inscriptions consist essentially of a framework of dates and the intervening periods.

Considerable progress has recently been made in the critical examination of the inscriptions, since we now have facsimiles of them which are as accurate as the condition of the originals permits. In particular the great Biologia Centrali-Americana, by Godman and Salvin, has materially assisted us in this with the section edited by Maudslay under the title Archeology, and each new number of this work as it appears is an additional station on the road of science.

Of the plates to this work, the free use of which has been made possible to me by the courteous permission of Mr Maudslay himself, I wish to call attention to the three designated as plates LX to LXII. They are from the Temple of Inscriptions at Palenque. Plates LX and LXII are of the same dimensions, each having 20 vertical columns and 12 horizontal rows, while plate LXI has only 14 vertical columns and 10 horizontal rows. Hence there are on these plates 240+140+240=620 glyphs, of which, however, those in the first 9 columns of plate LX are mostly destroyed. There is no doubt that plate LX is actually to be considered the first of the three, because its initial glyphs correspond with those at the beginning of other inscriptions, while plates LXI and LXII are without such characters. I shall denote the columns of plates LX and LXII by the letters A to U, of plate LXI by A to O, allowing H, I, and K to succeed one the other in the original way (without a J), and the horizontal rows I shall naturally denote by numbers.

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[a] Aus dem Inschriftentempel von Palenque, Globus, v. 75, n. 5, 1899.

It can furthermore be proved that plate LXI is in fact the continuation of plate LX.

The day $9\times144{,}000+9\times7{,}200=1{,}360{,}800$ is given on plate LX at P and Q 6; on the same plate U 2, on the other hand, $10\times7{,}200$ is given; on plate LXI A 3 is $11\times7{,}200$, and on the same plate G 2 is $12\times7{,}200$; that is, they occur in regular periods of 20 years, just as the centuries are sometimes found noted on the margin of our historical tables. Evidently $9\times144{,}000$ is mentally to be added to each of the last three numbers. Hence they signify the four days 1,360,800, 1,368,000, 1,375,200, and 1,382,400; these, however, denote the calendar dates III 17, 3, 4 (year 7 Cauac), I 17; 8, 17 (year 13 Ix), XII 17; 8, 12 (year 7 Ix) and X 17; 8, 7 (year 1 Ix). As a matter of fact the first date occurs in plate LX, Q 2 P 3, the third in plate LXI, A B 2, the fourth, although somewhat irregularly written, in plate LXI, G H 1; and the second, in plate LX, T U 1, has been destroyed. These dates, judging by the other inscriptions, obviously refer to the present. Let us hope that we shall soon be able to translate them into our chronology. According to all appearances they are in the fifteenth century.

Plate LXI suggests another observation which may be of importance. We find there in not fewer than 6 places a glyph which is not unlike a fist (see 1, plate XLIV). With this there are always from 4 to 12 other signs, which, from their positions, as well as from their repetition, suggest the idea that we have to deal here with 6 groups of glyphs closely allied in meaning. The 6 groups are as follow:

I......C 5 to C 7, five glyphs.
II......C 8 to E 1, seven glyphs.
III......F 1 to F 6, eleven glyphs.
IV......I 4 to I 10, thirteen glyphs.
V......L 3 to L 9, thirteen glyphs.
VI......M 9 to O 5, thirteen glyphs.

The total number of glyphs is, therefore, 62, but this number, owing to many repetitions, is reduced to about 29 different characters. As all the glyphs of the inscriptions are subject to manifold variations, it is not always easy to distinguish between them. It is possible that there are 28 or 30. I give here a transcription of these characters in the following order: First, those (1 to 3, plate XLIV) which occur 6 times in these groups; then, those (4 to 9) occurring 3 times; then, those (10 to 15) occurring twice, and, finally, those which occur but once (16 to 29).

These 29 signs are now divided in the following manner among the 6 groups:

I	II	III	IV	V	VI
1..C 5	1..C 8	1..F 1	1..I 4	1..L 3	1..M 9
10..D 5	11..D 8	12..E 2	19..K 4	4..M 3	4..L 10
3..C 6	16..C 9	3..F 2	20..I 5	2..L 4	2..M 10
2..D 6	3..D 9	2..E 3	2..K 5	5..M 4	5..N 1
13..C 7	2..C 10	13..F 3	5..I 6	6..L 5	26..O 1
	4..D 10	17..E 4	6..K 6	7..M 5	7..N 2
	9..E 1	6..F 4	7..I 7	23..L 6	27..O 2
		18..E 5	21..K 7	24..M 6	8..N 3
		14..F 5	8..I 8	8..L 7	12..O 3
		15..E 6	10..K 8	11..M 7	3..N 4
		9..F 6	3..I 9	3..L 8	28..O 4
			15..K 9	25..M 8	29..N 5
			22..I 10	9..L 9	14..O 5

The groups II and III, likewise V and VI, join one another; there is a single glyph between I and II, and five between IV and V. On the other hand, between III and IV, before the beginning of the three larger groups, there is a space filled with entirely different characters, which occupy a part of columns E and F, the whole of columns G and H, and the first three rows of I and K.

We know the meaning of but one of these glyphs; this one occurs three times and is numbered 5 (ahau, "lord"). The others, however, occur, almost all, in other inscriptions of Palenque, as the moon (2), fist (1), the recumbent person (9), the inverted net or cobweb (3), the chessboard (29), and also several of the profile heads; but we know nothing of their import. Lastly, the character 6, occurring frequently elsewhere, is to be mentioned. I am inclined to consider it the Aztec itzcoatl ("arrow serpent"). In these six groups of glyphs, none of the well-known characters, with the exception of ahau, are to be found, neither the glyphs of the days, months, and longer time periods, nor those of the constellations and the cardinal points, nor even the glyphs of the gods. Furthermore, all numbers are omitted here, which is an especially striking fact.

From all this it seems probable that we have to do here with certain sacred formulas, most likely formulas of prayer. It would give me great pleasure if this remark of mine should pave the way for one of my fellow students to some new discovery.

Beginnings of such groups appear even on plate LX. Although about a third of the characters occurring there are destroyed, glyph 1, plate XLIV, appears no less than eight times. To this, in six cases, are joined several of the glyphs given above and in addition the one given here (30).

This, however, is no other than the glyph of god C, the representative of the north and the night.

The six small groups on this plate are as follow:

A 7 to B 9: 1, 13, (?), 30, 16, 9, 29.
F 9 to E 11: 16, 9, 29, 1.
K 6 to 7: 1, 4, 30.
B 4 Q 4: 1, 30.
R 7 to S: 1, 13, 30.
T 10 to 11: 1, 13, 30.

The last two identical groups have still further reference to one another inasmuch as each is directly preceded by three glyphs which correspond to one another; S 1, S 2, and S 3, namely, are like U 6, U 7, and U 8, though the intervening characters in columns R and T are very different in both places.

On plate LXII the formation of such groups or formulas would be hardly appropriate, for this plate is almost wholly filled with dates and periods, as I have shown to be the case in the familiar Cross inscription. A few remarks relative to the dates and periods may be in place here.

We are first struck by the fact that the beginning of the page contains four dates without a statement of the periods intervening:

B 8 A 9: X 17; 8, 7 (1 Ix).
C 1 D 1: VIII 17; 8, 2 (8 Ix).
C 7 D 7: VII 17; 18, 2 (10 Kan).
C 11 D 11: X 17; 13, 7 (9 Muluc).

The day 17, therefore, occurs four times. This is the most important and most frequently employed of all the days, but it occupies a varying position in the weeks and years. The interval from the first to the second is computed at 7,200, from the second to the third at 740, from the third to the fourth at 9,220 days. The number 7,200 represents, of course, the familiar period of 20×360, but what are the other two intervals?

A few of the dates on this plate correspond to the intervening period:

Q 5: X 17; there is no 8, 7 (1 Ix) with this.
P 5 Q 5: 6+6×20+3×360=1,206=4×260+166=3×365+111.
P 7: VII 3; 19, 12 (4 Muluc).
In fact, X 17 to VII 3=166; 8, 7 to 19, 12=111.

Again,

R 6 S 6: VII, 14; 15, 1 (7 Kan).
R 7 to R 8: 1+6×20+7×360+2×7,200=17,041=65×260+141=46×365+251.
R 11 S 11: V 15; 6, 14 (1 Ix).
R 6 should be read VIII rather than VII. Then, VIII 14 to V 15=101 and 15, 1 to 6, 14=251.

Thirdly and lastly,

R 11: V 15; 6, 14 (1 Ix).
S 11 R 12: 2+11×20+9×360=3,462=13×260+82=10×365—188.
T 1: IX 17; 18, 4 (11 Kan).
But V 15 to IX 17=82 and 6, 14 to 18, 4=—188.

I now come to a mysterious circumstance. It is this, that though the period corresponds to the time between the two neighboring dates, it only does so when the process is reversed and the computation is made from the second to the first:

C 11 D 11: X 17; 13, 7 (9 Muluc).
E 1 F 1: 9×20+12×360=4,500=17×260+80=12×365+120.
E 3 F 3: VIII 17; 13, 1 (10 Muluc).
But VIII 17 to X 17=80; 13, 1 to 13, 7=120.

I would also note that the 9 in E 1 is only a conjecture with me: the original being plainly 8.

Similarly,

E 6 F 6: V 5; 1, 8 (9 Muluc).
E 7 F 7: 8+4×20+2×360=808=3×260+28=2×365+78.
E 8 F 8: III 17; 3, 4 (7 Cauac).
But actually, III 17 to V 5=28; 3, 4 to 1, 8=78.

Thirdly and lastly,

P 7: VII 3; 19, 12 (4 Muluc).
Q 7 to S: 9×144,000+7×7,200+11×360+3×20=1,350,420=5,193×260 +240=3,699×365+285.
P 10 Q 10: I 3; 19, 16 (9 Muluc).
And, in fact, I 3 to VII 3=240; 19, 16 to 19, 12=285.

There seems also to be backward computation in the case of U 5 to U 8, but the characters of U 8 have certainly undergone a change which as yet is inexplicable.

Since this backward computation occurs several times, it can not be based upon a confusion of the two dates or upon a mere accident. Furthermore, I think it also occurs in columns Q and R, of the Temple of the Sun at Palenque (Maudslay, plate LXXXIX). One hardly would think that the Maya priests tried in this way to obscure the meaning of the inscriptions.

In two cases the period between the two dates is evidently omitted because the interval between the dates is the same in the tonalamatl and in the year:

G 9 H 9: X 17; 13, 7 (9 Muluc).
H 10: V 5; 1, 8 (9 Muluc).

For the interval X 17 to V 5 and 13, 7 to 1, 8 is in each case only 8 days:

P 10 Q 10: I 3; 19, 16 (9 Muluc).
S 1: VII 3; 14, 10 (10 Ix).

Here I 3 to VII 3 as well as 19, 16 to 14, 10 is equal to 240 days.

For unknown reasons the period is not stated in other places, as between E 3 and F 6, between E 8 and G 2, between H 10 and H 11, between T 1 and T 3. It is impossible to obtain a clear understanding of the matter. There must be a corruption of the text in H 1 to G 7 and in T 3 to U 4 which it is quite impossible to fathom.

It is very remarkable that the first date is omitted before Q 3 and also before R 3. The day VIII 17, occurring in both cases, appears to have different positions in the year. This day, which divides a regular tonalamatl, beginning with IV 17, in the ratio of 8:5 (160:100), is of special significance in the last part of the Dresden codex. The ratio 8:5 is also that of the apparent Venus year to the solar year (584:365).

Plate LXII suggests still another remark. The plate contains, at the most, 30 regular calendar dates, each consisting of 2 glyphs and 2 numbers. Now, since there are in all 18,980 (52×365) different dates of this kind, it would be very improbable that one of these dates should be repeated if we were dealing with a historical succession of events. Nevertheless we find here:

X 17: 8, 7 in B 8, A 9, and Q 5.
X 17: 13, 7 in C D 11 and G H 9.
V 5: 1, 8 in E F 6 and H 6 G 7, also in H 10.

The frequent use of the day 17 (B 8, C 1, C 7, C 11, E 3, E 8, G 9, P 4, Q 5, T 1, U 8), which occurs almost as often as all the remaining 19 days together, is in itself an argument against a historic and in favor of a hieratic significance of this plate, while plates LX and LXI indicate rather that the significance is of a historic nature. The prayer formulas, if they be such, mark the transition.

Quite different from the inscriptions is the well-known Cross inscription of Palenque (Maudslay, pages 73 to 76). The latter appears to be a consecutive chronologic table which treats of mythic ages as far as F 12 and thenceforward of historic time. Two other inscriptions, likewise from Palenque, one from the Temple of the Sun (Maudslay, pages 81 to 82), and one from the Temple of the Foliated Cross (Maudslay, pages 88 to 89), are very closely related to one another, particularly so in their arrangement as a whole, then in the striking agreement of the so-called initial series, and also in their alternation of dates and periods; but I will venture no further remarks.

Very different from all these inscriptions are the stelæ and altars of Copan, which belong to about the same period as the monuments of Palenque, as those appear to refer in every instance to a single event.

THREE INSCRIPTIONS OF PALENQUE

BY

E. FORSTEMANN

THREE INSCRIPTIONS OF PALENQUE[a]

By E. Förstemann

If we turn to the southeast from the principal edifice, the so-called palace, on the long famous site of the ruins of Palenque, we find at a distance of about 100 meters three buildings which approximately form the corners of an equilateral triangle whose sides are about 50 meters in length. Their position can be best understood from the sketch map of Holmes, Archæological Studies among the Ancient Cities of Mexico, part 2, page 208, plate XXIV, Chicago, 1897; also in Maudslay, volume 4, plate I.

The three buildings are as follow:

I. The Temple of the Cross, the inscription of which I have discussed in Globus, volume 72, number 3, pages 45 to 49.

II. The Temple of the Cross No. 2 (according to Holmes) or of the Foliated Cross (according to Maudslay).

III. The Temple of the Sun.

Each of these three buildings contains a large inscription of an entirely different character from the three tablets in the Temple of Inscriptions southwest of the palace, of which I have recently treated.

The inscriptions of these three temples, on the other hand, are closely related, and to show this will be the theme of the present article. I shall designate them by the numerals I, II, and III, as the temples themselves have been designated. Maudslay also says, volume 4, page 30, in regard to Temple II: "The plan and arrangement of the building are almost precisely similar to those of the Temple of the Cross".

A cursory glance shows that these three inscriptions belong together. Their center is occupied by a large design, which in I and II is a figure resembling a cross, usually thought to be the tree of life, on which the sacred quetzal bird sits. In III the central figure rests on the shoulders of two crouching persons. The lower part of the figure consists here of a rectangle curiously adorned, from which two crossed lances project, the point of intersection being hidden by a fantastic face, which has been regarded as the symbol of the sun, hence the name of this inscription and of the temple.

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[a] Drei Inschriften von Palenque, Globus, v. 76, n. 11, 1899.

At the right and left of the central picture stands a priest, or, more correctly, a priest with his assistant, the latter smaller in size. In I and III the priest is on the right, in II on the left, and his assistant on the other side. The priest in each of the three reliefs holds up his hands, also the assistant in III reaching toward him a form resembling a human being as a sacrifice. The assistants in I and II hold the hands downward and grasp an object unintelligible to me.

Tablets of inscriptions on each side of the picture produce a symmetric whole. In I each of these tablets has six columns, in II and III only four. I designate those in I by A to F and S to X, in II by A to D and L to O, in III by A to D and O to R. The intervening letters I employ for the smaller groups of glyphs, which are irregularly scattered about the central design. In I and II each vertical column consists of 17 glyphs, in III of 16.

Not only are the three inscriptions very much alike in their general arrangement, but they also correspond in many details. All have at the top, on the left, the superscription occurring on other Maya remains, which occupies the space of four glyphs. These superscriptions, indeed, differ in particulars which are still unexplained, but they all have the signs for 360 and 7,200 days, and must, therefore, denote something like " measure of time ". In fact, the three inscriptions contain numerous periods and dates, which occur most frequently on inscription I, as I have stated in the article referred to.

The superscription is followed by the eight glyphs A 3 to B 6, of which the several pairs undoubtedly indicate the periods of 144,000, 7,200, 360, and 20 days, and in II and III there are two heads of gods for each period, a fact which is not yet clearly understood. In I, instead of the second head (in column B) there is the mere glyph which elsewhere denotes the period in question. I am inclined to conclude from this that I is more recent than II and III.

A 7 B 7 in I has a hand, cleverly intimating that counting is to be done on its fingers, and there is no head beside it. This at all events denotes the single day. Both II and III, on the other hand, have two heads each.

Farther on the three inscriptions become more unlike, yet they still offer many points of comparison. Thus in almost the same place they have a pointing or an extended hand—in I, B 11; in II, B 10; in III, A 11.

The various glyphs which have a Ben-Ik above them occur in these three inscriptions, as in all Maya literature. They do not therefore prove that a more or less close connection exists between these inscriptions, but they deserve very special investigation.

That the familiar signs for the days and those of the months, which are more difficult to recognize, often occur in each one of the three inscriptions. I need not point out in detail, any more than that the day 17 (Ahau) is very prominent here, as in all Maya literature.

But I must call attention to a sign (*a*, figure 113), the understanding of which would be an important step in advance. With many variants, it has the form given above.

We find this glyph in the following places:

I: A 11, 17, C 17, D 2, E 7, 13, 17, S 7, 11, U 15, V 4, 9, W 13, 16, X 2, 7, 9.
II: A 10, B 16, C 5, N 2.
III: B 10, C 1, 10, Q 13.

I believe the chief element of this sign to be a serpent from whose back arrow points project. This recalls the Aztec itzcoatl ("arrow snake"), as it is represented by Brasseur de Bourbourg (Histoire des nations civilisées du Mexique, volume 1, page xlv). This was also the name of the fourth king of Mexico. Can this sign have the meaning of combat or war? I hesitate to refer it to the king who died in 1440.

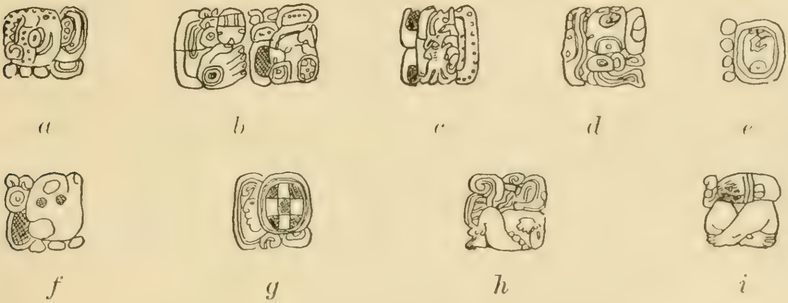

FIG. 113. Glyphs from the Palenque inscriptions.

Quite as important as points of agreement in all three inscriptions are points of agreement in two of them. The most important of these is the repetition on one inscription of a calendar date occurring on another. This can not be accidental, for the Mayas had 18,980 different calendar dates, and each of the three inscriptions has only between 10 and 20. But it must be regarded as direct evidence of the dependence of one inscription on the other when in two inscriptions the same two calendar dates are consecutive and the actual interval between the two is even given in both cases. I will mention the following instance first:

	I	III
Date IX 20; 6, 6	G 1 H 1	Q 6 R 6 and E F 1
Interval 537	L 7 and 8	Q 14 R 14
Date XIII 17; 18, 14	L 9	R 14, Q 15, and G 2 H 2

Thus in III the two dates occur even twice, but their distance apart is stated only once.

This interval, however, is really the correct one, but in III it is somewhat irregularly written. But 537=2×260+17, and there is, in fact, an interval of 17 days from the day IX 20 to XIII 17. 537 also equals 365+172, and from the sixth day of the sixth month to the eighteenth day of the fourteenth month there are in fact 172 days.

In none of the three cases, however, does the interval follow directly after the first date; after G 1 H 1 there first follow 8 glyphs, after E 1 F 1 there are 4, and after Q 6 R 6, 14. But of these 14 signs the last 6 are doubtless to be disregarded; they consist of a period, a date, and two more glyphs, which, it is true, are connected in a manner as yet obscure with the rest of the passage in which they are inserted, the detailed investigation of which does not belong here.

In the three places, therefore, there are left 8, 4, and 8 glyphs, which are inserted respectively between the first date and the period of time. We can, therefore, readily conjecture that these three groups have a similar purport and similar signs, and where the signs differ that one sign has been substituted for another. But I must leave the investigation of this point, like so many others, to the future. I only add that the sign I 1 in inscription I is like the sign E 2 in inscription III; both stand at the beginning of the group of inserted glyphs; and in G 1, which is third in the group of the inserted signs of inscription III, we find a glyph with the numeral 7 as a prefix; with this corresponds the fourth in inscription I, the obliterated glyph L 2, of which, however, enough remains to show that it likewise has the prefix 7. Thus we certainly have two indications that the inscriptions are of like import.

But I can furnish a second example of the agreement of two dates and their interval in two inscriptions. It is the following:

	II	III
Date II 13; 14, 8	L 1 M 1	O 4 P 4
Date III 14; 15, 8	M 5 L 6	P 7 O 8

It is plain that two successive days are here meant, therefore an interval need not be stated. Between the two dates inscription II has 7 glyphs, inscription III only 5. Among these the first two in both cases are identic, and this is also true of the third, which is a very evident sign that the two inscriptions are of kindred import.

It should be remarked, further, that the date II 13 is repeated in inscription II, N 16, in the following very remarkable connection:

Period 604	O 13 N 14
Date VIII 17; 8, 2	N 15
Date II 13 (no month given)	N 16

But 604=2×260+84, or 365+239. From II 13 to VIII 17, however, there are 84 days (counting backward), hence the fourteenth day of the eighth month is to be supplied after N 16, as we found it above with the date II 13.

It is very remarkable that the inscriptions I and II correspond with regard to the following point: In I, on the right and on the left of the lower part of the cross, there are two glyphs, each combined with the numeral 5; in II the middle part presents the same signs, although less symmetrically. One glyph in each of these two series of four glyphs contains the sign of the fifteenth day, Ezanab; the others are indistinct. But in a period of 20 years, each period of 5 years begins with one of the days Lamat, Ben, Ezanab, and Akbal, and to this the glyphs seem to refer.

The date VIII 7; 3, 17, is worthy of notice; this occurs in I at O 1 and 2; in II it even occurs twice, N and O 5 and E 1 and 2.

In reference to the prominence of the day 17 (Ahau), already mentioned, it should be remembered that the beginning of Maya chronology is to be sought, as a rule, in the day IV 17; 8, 18, in the year 9 Ix, whilst sometimes the day I 17; 18, 17 in the year 3 Kan, which day is 2,200 days before the day first named, is also regarded as a starting point. In the last part of the Dresden manuscript the day VIII 17 seems to be important; this day divides a tonalamatl, beginning with IV 17, in the ratio of 8:5, that is, in the ratio of the apparent Venus year to the solar year. If we examine our three inscriptions with respect to this day, we find the normal date IV 17; 8, 18 actually in I, D 3 and E 4, and in III, P 2 and O 3. The day I 17, but in a different position in the year, appears in I, A 16, and in II, B 8 and D 14; the day VIII 17 occurs in II, N 15. The day II 17, too, occurs in II, C 8; V 17, in I, U 10; XI 17, in II, C 13; XII 17, in III, Q 2; and XIII 17, in III, G 2. The other 19 days only occur singly.

In my treatise mentioned above, I remarked, at the end, concerning inscription I, that in it these two glyphs (*b*, figure 113) occur nine times, apparently indissolubly united.

The passages where they occur are F 7 E 8, S 1 T 1, T 7 S 8, T 15 S 16, U 6 V 6, V 11, U 12, U 16 V 16, W 3 X 3, W 17 X 17. In II we find this combination only twice, O 2 N 3 and E 3 and 4, once also in III, namely, at M 2 N 2. They are even found in the Temple of Inscriptions (see Maudslay, plate LXII, T U 9). With this abundance of examples, it is hoped that further light will soon break on the meaning of these glyphs.

Inscriptions II and III, but not I, also correspond with regard to the preceding sign, *c*. We find it in II, C 9 and M 10; in III, P 13. It consists of a hand grasping an object in such a way that it is held between the thumb and four fingers. When the separate places where it occurs are compared with each other, the object can not well be anything but a fish, and fish have a meaning of no slight importance in the manuscripts of Maya literature. Does this glyph refer directly to fishing? In the next four examples we see an agreement of inscriptions II and III with the Temple of Inscriptions, while on the other hand these glyphs are lacking in I.

The most important among them is a hand, of which the thumb and forefinger are plucking or picking or holding up some object (see *d* and *e*).

Another of these two figures occurs in inscription II, M 2 and O 8; in III, O 9; and in the Temple of Inscriptions (in Maudslay, plate 62), in D 2, H 1, and G 11. The second figure means, as the context shows, nothing else than the day IV 4, or IV Manik. I think that in my article on the Day Gods of the Mayas (Globus, volume 73, number 9) I have pointed out that the fourth day, the hand, and a hunting god belong together, but I do not know what the hand was doing in this connection. Now, the second of the above signs shows in two passages in the inscriptions of the Temple of Inscriptions that it is hanging the snares in which the game—the same day is called in Aztec Mazatl ("deer, or roe")—is to be caught, such snares as have become familiar to us as forming the subject of an entire section of Codex Troano-Cortesianus. We see a similar snare with a XIII in an inscription of the Palace of Palenque, in Maudslay, volume 4, plate 29.

The following three glyphs have been met with already, in my article on the Inscriptions of the Temple, as parts of those groups which I believe should be regarded as formulas of prayers, but these can hardly be in question in inscriptions I, II, and III. The sign represented in *f* usually occupies the first place in the formulas of prayer and seems to be only a left fist. It occurs in II, E 7 and M 8, as well as in III, P 10.

A second sign is the accompanying figure, *g*, resembling a chess-board, which is likewise familiar from the Temple of Inscriptions. The passages where it occurs are in II, O 10, in III, D 6 and P 6.

When I first became familiar with these inscriptions none of the glyphs attracted my attention so much as the recumbent person often occurring in the Temple of Inscriptions (see *h*).

This glyph occurs in Inscription II no less than four times: D 2, C 6, M 4, and N 10. In III it seems to be lacking, yet the question arises, whether the two crossed legs in B 11, *i*, which I have seen in no other passage, may not be meant for a recumbent human body viewed from below. Perhaps these figures are connected with the large pictorial representations on the pillars of the Temple of Inscriptions (Maudslay, volume 4, plates 45, 46), where the priests bear in their arms a recumbent figure about the size of a child 4 years old.

The agreement between inscriptions II and III is most pronounced in the two columns which stand directly at the right of the central pictorial representation. These are columns L and M in II and O and P in III. I will place side by side the glyphs that are exactly alike, a few of which I have already discussed above, and inclose in parentheses the number of intervening signs that are unlike:

II	III
L 1	O 4
M 1	P 4
L 2	O 5
(1)	(1)
L 3	O 6
(4)	(2)
M 5	P 7
L 6	O 8
M 6	P 8
(1)	(1)
M 7	P 9
L 8	O 10
M 8	P 10
	(2)
L 9	O 12
M 9	P 12
L 10	O 13
M 10	P 13

Hence in each 20 glyphs 14 are alike, occurring in the same order of succession, and only 6 in each are unlike. But even of these M 2 proves to belong to P 5, possibly as a variant, as it has the same prefix.

Many comparisons of other glyphs in these inscriptions might be made here, but enough has no doubt been said to stimulate further research. It is a remarkable fact that the glyphs of the individual gods do not seem to appear at all in these tablets as they have been pointed out to us by Schellhas. At most I believe that I have a clew to the two gods C and K, perhaps also to D and A; but to follow up this clew now would lead me too far.

All that I have communicated here doubtless gives the impression that I scarcely know how to answer the obvious question, What does all this mean? that in the decipherment of the inscriptions, even far more than in that of the manuscripts, we are yet only at the very beginning. This is certainly to be regretted, especially on account of the progressive decay of the originals, but still more unfortunate is the lack of workers who will earnestly strive for the advancement of science in this department. Even the Americanist congresses either regard Maya research as secondary, although it concerns itself directly with the highest mark attained by all aboriginal Indian culture, or they give it no consideration at all. So I feel that my position is an isolated one, and I foresee, besides, that my activity in this field of reseach will soon be terminated. Therefore let us hope that this communication, aside from its especial object, may be regarded as an invitation to cooperate with me.

COMPARATIVE STUDIES IN THE FIELD OF MAYA ANTIQUITIES

BY

P. SCHELLHAS

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COMPARATIVE STUDIES IN THE FIELD OF MAYA ANTIQUITIES[a]

By P. Schellhas

INTRODUCTION

In Central America aboriginal civilization reached its highest development among the Maya races. Its remains offer material for the scientific reconstruction of this old and interesting domain of man's endeavor in the realms of thought and culture, and in the form and extent in which they now lie before us they are of three kinds:

1. The architectural remains, the temples and palaces, with representations in relief and inscriptions.
2. The Maya manuscripts.
3. The smaller antiquities, which have received a material accession in the Yucatan collection at the Berlin Museum of Ethnology.

As regards the value of these various kinds of antiquities to the investigator, it must above all be remembered that we are dealing here with a civilized people, whose earliest phases of intellectual activity and of thought had already found expression in a species of literature and a distinct style of art. Such an inquiry must be first directed to the most perfect and best developed phenomena. If we understand these, the interpretation of all subordinate and antecedent phenomena follows as a matter of course. I believe, therefore, that the chief stress should be laid upon deciphering the written characters, and that the solution of all questions should be sought for there (see Die Mayahandschrift der Königlichen Bibliothek in Dresden, in the Zeitschrift für Ethnologie, 1886).[b] The literary productions contain the quintessence of the entire civilization; they are the key to the comprehension of the whole. It has since been acknowledged in various quarters that the mode of deciphering that I suggested was the true one, although the results could be but scanty at first. Valuable contributions have been made by Seler, with the aid of rich material from cognate departments (Zeitschrift für Ethnologie, 1888). On the part of the American scholars, too, a gratifying success has been attained in this field (Aids to the Study of the Maya Codices, by Cyrus Thomas, Washington, 1888), and the amazing results which Professor Förstemann has won in the domain of the Maya calendar and chronology are not far removed from a complete solution.

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[a] Vergleichende Studien auf dem Felde der Maya-Alterthümer, Internationales Archiv für Ethnographie, v. 3, Berlin, 1890.

[b] Also my Göttergestalten der Mayahandschriften, 2d ed., Berlin, 1904; translated into English in Papers of the Peabody Museum, v. 4, n. 1, 1904.

Having thus gained a firm footing, in contrast to the earlier fanciful attempts, and an important addition having been made to the material for investigation in the Yucatan collection of the Ethnologic Museum at Berlin, we can now take a more comprehensive survey of the whole field than was hitherto possible. The first question which presses upon us in such a comparative survey is in regard to the unity of the whole, the period and place of origin of the individual relics. The material must be carefully sifted and sorted before it can be studied. In this respect Americanist research is laboring under great disadvantages. In other fields ethnology collects its material among nations, who, though on the eve of entire absorption by European civilization, still live in a condition which makes a study of their organism possible. Among nations, like the Hindoos and Chinese, whose traditions are carefully fostered, and who still preserve a close connection with the peculiar creations of their past in the forms in which they have developed down through the ages to the present time, the study of the earliest periods of civilization is a comparatively easy matter. But in America ancient civilization breaks off abruptly and forever at the point where it fell a victim to a stronger power. No continuous development took place; no tradition preserved what had already been acquired. The bearers of that more powerful civilization had no comprehension of humanity when it manifested itself in a manner so utterly alien to and remote from their own; the tender care with which the remains of a peculiar, highly developed intellectual life are cherished in these days was wholly unknown to them. The origin of the little which still remains, therefore, is for the most part undetermined. Archeologic difficulties are also added to this difficulty of ethnologic investigation. A multifarious swarming of races prevailed in Central America; civilized nations roamed hither and thither; centers of civilization flourished and perished; numerous languages existed side by side, and were exchanged, changing and altered with marvelous rapidity. Without transcending the limits of science in fanciful suppositions, which are never more dangerous than in this domain, we may assume that many chapters of ancient human history have sunk into oblivion on Central American soil, and that many a civilized race, of which not the slightest memory remains, existed upon that soil long before the conquest. Where there is no difficulty in determining the local origin of remains, as in the case of buildings and monuments, the obstacles in the way of an ethnologic and chronologic determination are often all the greater.

Inductive inquiry into this ancient civilization must begin with an external comparison of the remains. In this way alone can we attempt to determine in how far they are of the same origin. We can pave the way to an accurate determination of the period and source of separate antiquities only by means of careful sifting and discrimination based on their external characteristics.

WRITTEN REMAINS

The written remains, to begin with these, show great uniformity. We may assert positively that all the written material from Central America proceeds from one and the same source: the characters are essentially the same in the inscriptions, in the manuscripts, and on the clay vessels and other lesser antiquities. There was but one mode of writing in Central America, which emanated from one center of civilization. The four manuscripts in particular are plainly of one and the same origin. They may readily be divided into two groups. The Troano and Cortesian codices are entirely similar, and are simpler and ruder. They are undoubtedly fragments of a single manuscript. The Dresden manuscript and Codex Peresianus, which also strongly resemble each other, are more elegant and artistic in text and pictorial representations. It is highly probable that all the manuscripts pertain to one and the same nation, but whether they belong to the same period[a] is very doubtful. The forms of the characters differ too much for us to ascribe the differences merely to the peculiarities of two writers. The presumption that Codex Troano-Cortesianus is the oldest lies near at hand, but it is contradicted by the fact that not only the representations but also the written characters in this manuscript are simpler, more conventionalized in form, than in the Dresden and Peresianus codices. Glyphic characters never become more complex with time; they rather become simplified; they become conventional figures, such as occur repeatedly in Codex Troano-Cortesianus (compare forms *a* and *c*, figure 114, from the Dresden codex, and *b* and *d*, figure 114, from the Troano codex).

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[a] Professor Förstemann has devoted himself particularly to the question of the period of the Maya manuscripts (see his Commentare zur Dresdener Handschrift, Dresden, 1901; Zur Madrider Handschrift, Danzig, 1902; and Zur Pariser Handschrift, Danzig, 1903).

It is therefore difficult to settle the question. It is possible that the very skillful scribe of the Dresden manuscript took the more elaborate forms of the inscriptions for his models.

We have already (Zeitschrift für Ethnologie. 1886, page 50) emphasized the fact that the forms of the outlines of the written characters show characteristic differences. In the Troano and Cortesian codices the form of the parallelogram prevails, *f*, while the Dresden and Peresian codices give preference to a peculiar ellipse, *e*. The inscriptions have more or less perfect circles or squares with rounded corners, *g*.

Two isolated exceptions to the uniform similarity of the written characters may be mentioned. In Stephens's Incidents of Travel in Central America, Chiapas, and Yucatan, on plate XIII, we have the back of one of those statues found in such large numbers at Copan covered with glyphics which consist of entire, singularly contorted human figures. We may, however, doubt whether this wholly isolated instance of such ideographic representation has the character of writing; it may possibly be intended to represent scenes from the myth of the deity in question. No less striking characters occur, however, on a small clay image in the Yucatan collection at the Berlin Museum of Ethnology. A short thickset figure, with a huge head-dress, sits or stands on a bench-shaped pedestal covered with characters, *h*.

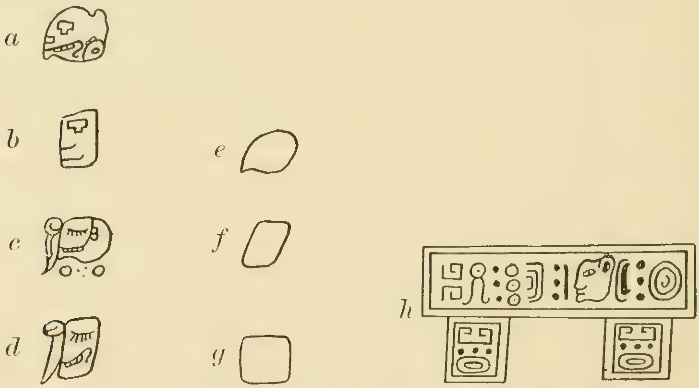

FIG. 114. Glyphs from the Dresden codex.

They appear to be written characters, as is indicated by the interspersed numerals (an 8 and four times a 3) as is usual in Maya writing. Otherwise they show considerable divergence from the usual form of Maya glyphics and are wholly unintelligible. A conjecture may, however, be hazarded. When numerals occur in Maya writing, it is almost invariably in connection with calendric and astronomic dates. It is very probable that the clay figure in question represents a divinity of the calendar, and that the inscription has a mythologic calendric meaning (*a*, figure 115, kin, "the sun"; *b*, the same; *c*, the waning moon; *d*, the increasing moon; *e*, the name sign of the deity represented, similar to *f*, from the Dresden manuscript, also the sign for a calendar divinity).

Besides this remarkable inscription, we also find in the Yucatan collection of the Berlin Museum of Ethnology two pottery vessels with glyphic characters, one in round, the other in square forms, just as in the different manuscripts. Almost all the characters on these vessels may be indentified with characters in the manuscripts; but this unfortunately does not determine their meaning.

While the written remains leave no room to doubt that they are all from one original source, a comparison of the pictorial representations in the manuscripts with those on the reliefs and on the objects composing the Yucatan collection shows such startling differences that any attempt to explain them meets with the greatest difficulties, and a common origin is scarcely to be assumed, unless, indeed, the existing remains belong to widely differing periods of time.

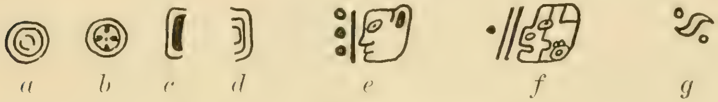

FIG. 115. Glyphs from the Dresden codex.

The representations of the human form with its dress, ornaments, weapons, etc., are especially well adapted to serve as objects for comparison.

REPRESENTATIONS ON MANUSCRIPTS AND INSCRIPTIONS

THE HUMAN FORM

The physical characteristics of the persons represented are in general always the same. We everywhere meet with the artificially deformed skull (compare Landa, Relacion de las Cosas de Yucatan, chapter 30), the large hooked nose, and the protruding lips, all of which are evidently racial peculiarities of the peoples of the Maya region. So, too, that "los indios de Yucatan son bien dispuestos y altos" (Landa, chapter 20) is repeatedly confirmed by figures on the reliefs and by the clay images in the Yucatan collection. A beard, which, it is well known, the Mayas lacked, occurs in very rare instances and of scanty growth in the Dresden manuscript (for instance, on pages 7 above, 11 in the middle, and 27) and always in the case of a particular deity, the god D. It also occurs once in the Troano codex, on page 24 above. A figure with complete moustache and chin beard, of the form worn by the Spaniards at the time of the conquest, occurs in the Yucatan collection; nothing similar appears either on the reliefs or in the manuscripts. There is nothing to favor the assumption that the figure represents a European. It shows quite the usual type seen in similar representations.

TATTOOING

Tattooing was customary among the Mayas. Landa gives an account of it in chapter 22. We find but little in the manuscripts which we can positively regard as tattooing. As such we may certainly consider the foregoing character, *g*, figure 115 (cimi, "death"), on the cheek of the sitting figure from the Dresden codex, page 28, middle (priest of the death god), and perhaps the sign akbal ("night", "dark") on the forehead of the same figure (see, too, Dresden codex, page 5, middle), also the sign for the sun on the body of the figure (sun god) in the Dresden codex on page 15, above. It is hard to say whether the singular flourishes on the faces of many of the deities[a] represented are intended for tattooing or whether they are not more probably conventional symbolic accessories to the representation. A peculiarity of the manuscripts, which is especially noticeable in the written characters and which consists in indicating the jawbone with the teeth in human faces (especially in the case of the death god, but not in his alone), recurs as tattooing on a figure in the Yucatan collection at the museum. The figure given on plate I of the Veröffentlichungen des Königlichen, Museum für Völkerkunde, October, 1888, one of the finest pieces in the collection, on close examination shows tattooing on the face, as restored in the accompanying cut, *b*, figure 116.

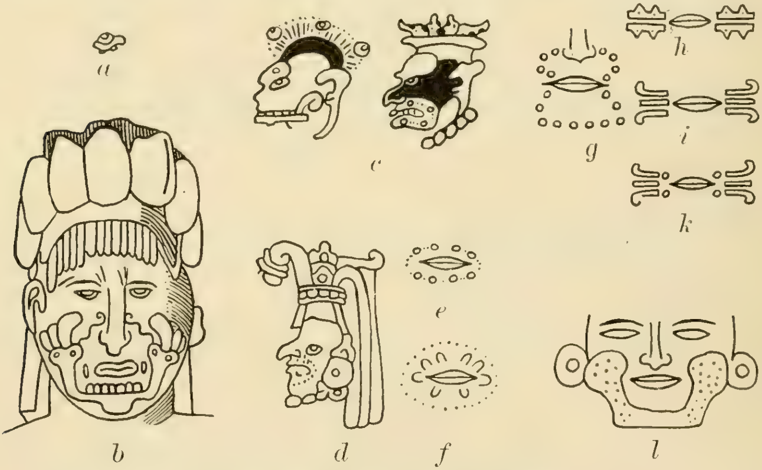

FIG. 116. Tattooing and facial decoration.

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[a] It would lead us too far to go into particulars. We may mention the decorated eye (*a*, fig. 116), which occurs so often, also the face of the deity C, who is frequently represented in Codex Troano-Cortesianus, and the god F, the figure with the thick black line on the face, Troano codex, p. 30, below, Codex Cortesianus, p. 42, etc.

Compare with this the head of the death god so often represented in the manuscripts, for instance, on pages 15, 23, and elsewhere in the Dresden codex (see *e*), in which the lower jawbone with the teeth is likewise always seen, drawn very plainly; also the glyphs given above (*a*, *c*, and *d*, figure 114).

This tattooed jawbone with teeth was apparently meant to impart to the face a terrible aspect. A decided preference seems to have existed for tattooing the vicinity of the mouth. The accompanying head (*d*, figure 116) occurs frequently in the manuscripts, for instance, in the Dresden codex, page 14, below, and in Codex Cortesianus, page 33, above. Viewed from the front it would give the mouth tattooing in *e*. We find quite similar faces in the Yucatan collection, where tattooing also occurs most frequently about the mouth (see *g*, *h*, *i*, and *k*).

The peculiar object occurring upon two figures in the Yucatan collection is also probably to be regarded as a kindred form of facial decoration. It is the facial ornament shown in the accompanying cut, *l*.

We can hardly explain this object otherwise than as a chin ornament, possibly metallic, possibly connected with the ear ornaments. It has, as a comparison shows, the closest resemblance to the drawings of tattooed jawbones here reproduced from the manuscripts, and has most probably the same meaning. There is much to be said against the supposition that it is a beard, particularly the fact that the representation of a beard on another figure in the collection, already mentioned, is wholly different and much more natural.

There is no tattooing to be seen in the relief representations. This, however, is probably due to the rougher nature of those representations, in which less attention is paid to details. The rudely executed Codex Troano-Cortesianus also has little of the sort.

DRESS

GENERAL CHARACTERISTICS

Landa makes a few statements in regard to the dress of the ancient inhabitants of Yucatan which may serve as a basis for comparative investigation. The bishop tells us in his Relacion (chapter 20):

> Their dress consisted of a girdle, of the width of a man's hand, which served them as breeches and hose (bragas y calças), and which they bound about their loins several times, in such fashion that one end hung down in front, the other behind.[a] These ends were carefully wrought by the women and adorned with embroidery and feather work. Over this they wore large square mantles,[b] which they fastened on the shoulder, and on their feet sandals of hemp or tanned deerskin. They used no other clothing.

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[a] This is the same article of dress which the Aztecs called maxtli.

[b] Called zuyen according to Cogolludo, Historia de Yucatan.

In another place (chapter 5) Landa says, speaking of the ancient buildings:

> That all these buildings were erected by the same Indios who live there now[a] is plainly seen by the naked men portrayed on them in stone, whose privy parts are covered with broad girdles, which they call in their language ex.[b]

And we are told of the warriors that they went forth to war "clad in the skins of tigers and bears".

Concerning the dress of the women, Landa says, after paying them a very flattering and, we hope, unbiased compliment ("son en general de mejor dispusicion que las españiolas y mas grandes y bien hechas"),[c] that it consisted merely of a skirt, which covered the body from the hips down, while in some parts of Yucatan still another article of dress was used, which covered the breast. A long, sacklike jacket, reaching to the hips and fastened there by a belt, was also worn by many. In chapter 3 he states further that the female divinities of the country were represented "vestidas de la cinta abaxo y cubiertos los pechos, como usan las indias". Lastly, also a covering is mentioned, which the women use when sleeping, and which "when they take journeys they commonly roll up and carry on their shoulders".

The meager accounts of other authors for the most part agree with the foregoing, for instance, Cogolludo in his Historia de Yucatan. Bancroft, The Native Races of the Pacific States, draws from recorded statements the conclusion that the dress of the various classes of the population did not differ greatly among the Mayas, save that, of course, the material used by persons of higher rank was finer. Warriors were, however, as already mentioned, provided with special articles of dress (skins), and the priests were also undoubtedly distinguished by their dress from the "profanum vulgus". Landa says, in his account of the Yucatec ceremony of infant baptism (chapter 26), that the officiating priest "wore an overdress of red feathers, decorated with feathers of various colors, while larger feathers were pendent from it, and to the lower hem were attached long strips of cotton reaching to the ground. On his head he wore a sacerdotal cap of the same feather work and in his hand he had a kind of aspergill of wood, with elaborate carvings, upon which, instead of horsehair, rattlesnakes' tails were fastened". One of these sprinklers is depicted in Codex Cortesianus, page 26, lower middle.

A glance at the representations in the manuscripts, the reliefs, and the figures in the Yucatan collection is enough to show that, on the one hand, the dress was far more varied and manifold, and that, on the other, Landa's description is not entirely accurate, nor do the remains correspond among themselves. Brasseur de Bourbourg's assertion: "Le vêtement chez la plupart des Americains était immuable" (Hist. des nat. civ., volume 3, page 647) is contradicted by the antiquities. Herrera's remark that "the Mayas dress like the Mexicans" is not wholly accurate, and we can by no means draw the conclusion from the remains, as Bancroft does, that the dress of people of various ranks among the Maya was very uniform.

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[a] This could not have been accepted as a fact beyond a doubt even at that time. How else could Landa have thought of bringing forward express testimony in its favor?

[b] Ex in the Maya of to-day (according to Pio Perez) means "breeches".

[c] Moreover, other authors say the same; for instance, Cogolludo (Book IV, chap. 6) and Herrera (Historia de las Indias Occidentales).

FOOT GEAR

Let us begin with the foot gear. According to Landa the Mayas wore sandals. While these occur constantly in the Mexican manuscripts, they are almost wholly wanting in the Maya manuscripts. Cogolludo (page 187) says, indeed, that the Maya mostly went barefoot; however, if they used sandals at all we might expect to find them frequently on the persons represented in the manuscripts (priests, warriors, gods, etc.). Cogolludo's remark plainly refers to the daily custom of the common people. In the Dresden manuscript the feet are almost always bare and quite carefully drawn. There are but few places where we find sandals (pages 26, 28, 46, 47, and 50). On pages 26 and 28 they have the form of *a*, figure 117; on pages 46, 47, and 50 that of *b*.

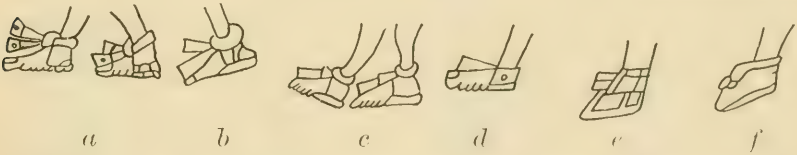


Fig. 117. Representations of sandals, from Dresden codex and inscriptions.

This is the same form that this foot gear has in the Mexican manuscripts (see *c*, Codex Telleriano-Remensis, and *d*, Féjerváry codex). On the other hand, not a single sandal occurs either in the Troano codex or in Codex Cortesianus; all the feet are uncovered; yet sandals are apparently quite common in the very badly preserved Codex Peresianus, usually in the form of *b* above. They are certainly far more frequent on the reliefs than in the Maya manuscripts, but here of an entirely different form (see *e*, bas-relief at Labphak, after Stephens, and *f*, drawing on a door at Chichen, after the same). These forms of foot gear occurring on Yucatec reliefs are, to all appearances, not sandals, but complete shoes covering the entire foot, no mention of which is made by Spanish authors. Besides these, simple sandals also occur on the reliefs.

In the figures of the Yucatan collection at the Berlin Museum the feet are, for the most part, so very slightly treated that it is not possible to tell whether they are clad in sandals. Some of them, however, are evidently bare. The fine, lifelike figure of a priest copied in the Veröffentlichungen des Königlichen Museum für Völkerkunde, October, 1888, plate x, wears distinctly executed sandals, of the form given in *a*, figure 118. We also find in the same collection a certain number of large clay feet with sandals, *b*, strongly resembling those given above taken from the Dresden manuscript. These feet do not seem to have been broken off larger figures, but to have an independent purpose, one of religious symbolism. This view is confirmed by the circumstance that similar feet are given in the Troano codex, page 21, in a sacrificial scene, *c*.

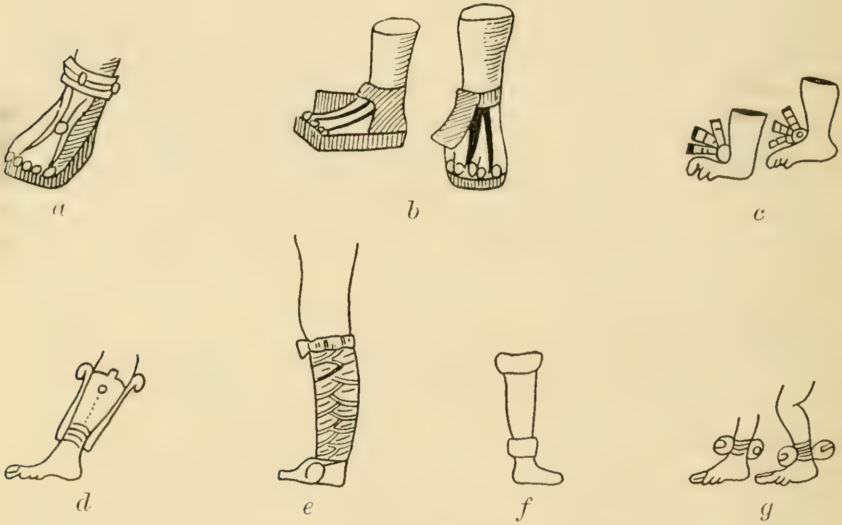
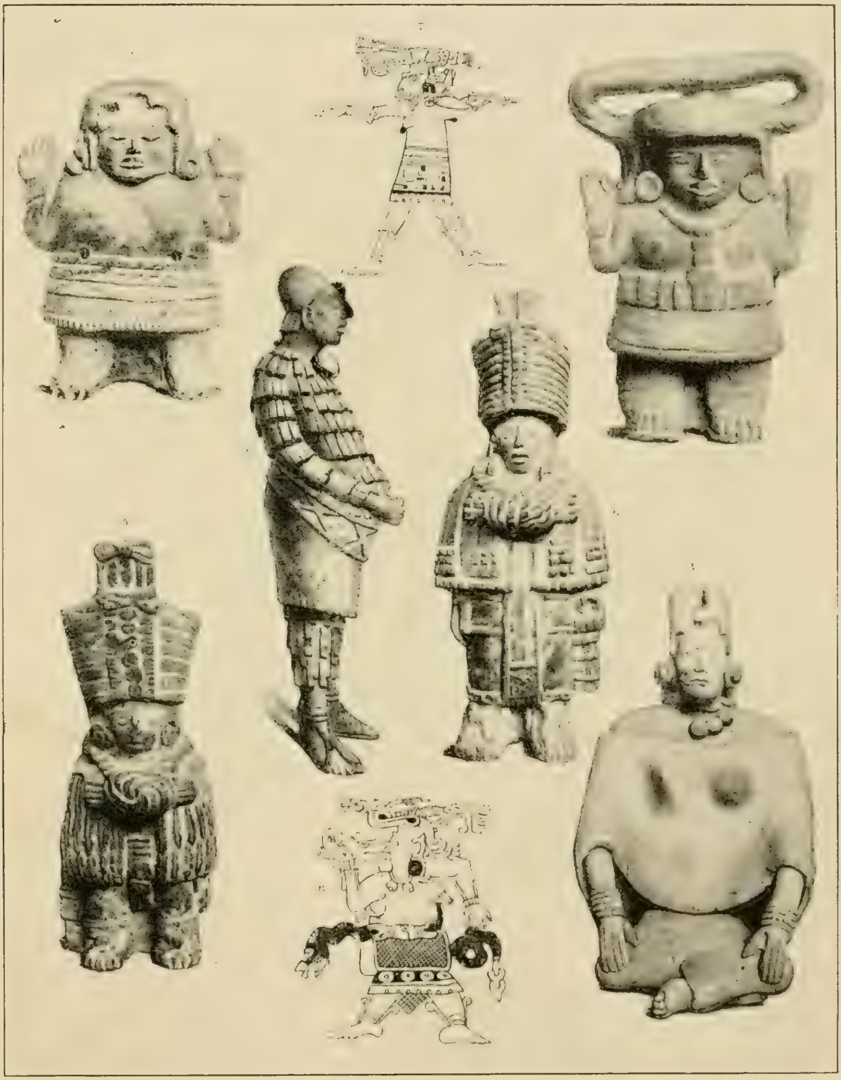


FIG. 118. Representations of sandals and leg ornaments.

The form and manner of fastening these various foot coverings is easily recognized from the illustrations (see a similar modern example that follows the ancient models in Guatemala in Stoll, Ethnologie der Indianer von Guatemala, 1889, supplement to Internationales Archiv für Ethnographie, plate I, figure 15). This one subject of comparison shows how strikingly the remains differ one from the other.

DRESS AND ORNAMENTATION OF THE LEG

While foot wear is so rare in the Maya manuscripts, a peculiar article of dress or ornament for the lower part of the leg is all the more common, but only for males, however, as the women do not wear it. This object is to be seen on almost every figure in all the Maya manuscripts, and may be regarded as distinctly characteristic of these representations (another proof of the common origin of the



DRESS AS SHOWN IN SCULPTURED FIGURES, YUCATAN

manuscripts). It takes the form of *d* in all the manuscripts, and it appears in similar shape and almost as often as an arm ornament. To judge by the manuscripts, it must have been in general use as a national article of ornament. Hence it is the more amazing that we nowhere encounter it among the reliefs nor on any of the figures in the Yucatan collection. A leg ornament appears, it is true, quite frequently among the former, but never in the shape which we regularly find in the manuscripts. Compare *e* (from a doorpost at Kabah, after Stephens), and *f* (mural decoration at Chichen, after the same). Such coverings for the entire lower leg are wholly absent from the Yucatan collection.

Besides the above-mentioned leg ornament, single instances of another kind appear in the manuscripts, shaped like *g*. It is found only on the figure of the death god and evidently forms one of his attributes (see Die Göttergestalten der Mayahandschriften, page 9). Its purpose is readily grasped. It consists of rattles or bells, buckled to the leg in order to produce a rhythmic sound during the dance, as is still the custom among North American tribes.

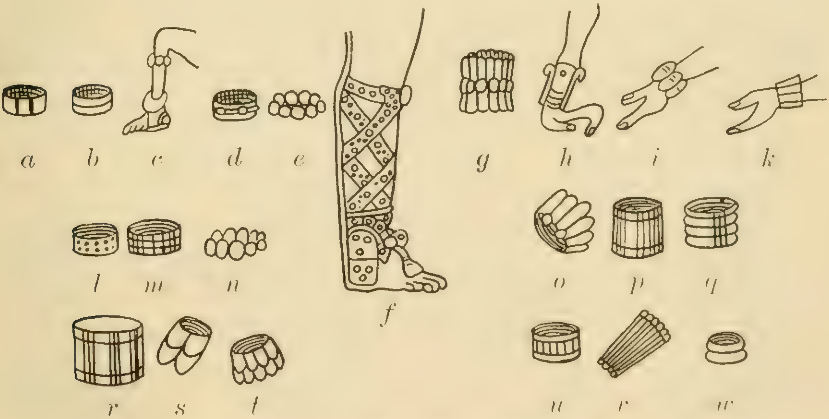


FIG. 119. Leg and wrist ornaments.

Lastly, we have a few instances, for example, Troano codex, page 17*, of a simple anklet like *a* and *b*, figure 119; also in one place (Dresden codex, page 50) as a leg decoration below the knee, *c*.

Similar objects occur in the Yucatan collection, as on the before-mentioned figure of the priest, *d*, and on another figure, *e*. These simple leg rings are also frequent in the reliefs at Palenque. A rich covering for the whole lower leg is also not unusual there, *f*.

A foot ring, apparently made of the feather work that is held in such high esteem in Central America, occurs on a figure in a carving on a beam of sapota wood at Kabah, *g*, after Stephens. Similar examples are frequent at Palenque.

ARM ORNAMENTS

We have already stated that the leg ornament characteristic of the manuscript occurs also as an arm ornament, *h*. It is seen on women as well as men (see Dresden codex, pages 17 to 19). So, too, the other leg ornaments represented in the Maya codices appear as arm ornaments, both the bells (and this again in the death god, for instance, Dresden codex, page 53) and the plain rings. The latter often occur in more varied form, as *i* (Dresden codex, page 27) and *k* (the same place, page 28).

Here, too, we have correspondences between the representations in the codices and the figures in the Yucatan collection. Among the latter we find, aside from the ornament characteristic of the manuscripts, quite similar bracelets, as *l*, *m*, *n*, and the form *o*[a] occurring on the figure of the priest; the forms *p*, *q*, and *r* also occur.

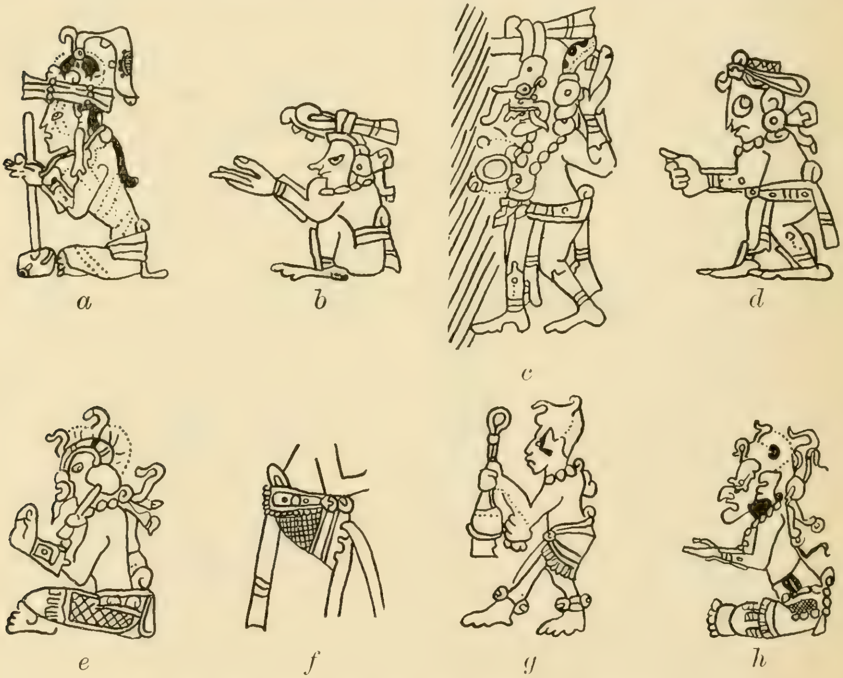


FIG. 120. Dress of the lower part of the body of females.

Nor are these arm ornaments wanting on the Yucatec reliefs, and here again are found the forms of those in the manuscripts and the Yucatan collection, *s*,[a] *t*,[a] *u* from Kabah; *v*, from Labphak; *w*, from Chichen.

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[a] These figures apparently represent an arm ornament of feather work (compare the anklet from Kabah, *g*).

The ornament met with on almost every figure in the manuscript is not to be found, however, on the reliefs, nor on the pottery images of the collection.

DRESS OF THE LOWER PART OF THE BODY

For men. According to Landa's description, this part of the dress consisted of a strip of a hand's breadth, which was wound several times about the hips, so that the ends hung down in front and behind. Such an article of apparel does indeed occur in the manuscripts; it was evidently the simplest undergarment, usually worn by the lower classes of the people. In this simplest form it appears in the manuscripts as shown in *a*, figure 120 (Dresden codex, page 6, middle, compare page 5, middle, etc.) and *b*, figure 120 (Troano codex, page 12*, above).

This is undoubtedly the cotton strip of a hand's breadth, which was wrapped several times about the hips in the manner described. The ends hanging down before and behind are everywhere to be seen, both here and in the following similar representations.

However, a more elaborate form of this article of clothing, which occurs most frequently in the codices, differs from Landa's description in so far that the strip is broader and to all appearance passes around the body, not several times, but only once, as in *c*, same figure (Dresden codex, page 65, above) and *d* (Troano codex, page 17, above).

This form, which is more like a belt made of leather or some similar stiff material than like a strip of cotton, is the rule in the manuscripts (and indeed also uniform in them all). The supposition that this object forms a sort of belt is strengthened by the fact that another article of clothing, an apron, is often added beneath, which is held up by this belt, as, for instance, in *e* (Dresden codex, page 5, above) and *f* (Codex Peresianus, page 16).

But this apron also sometimes occurs in connection with the simple cotton strip, as in Dresden codex, page 6, below, *g*.

This belt with the apron occurs in all the manuscripts as though an article of dress in general use. The stuff was evidently decorated with bright-colored ornaments, some of which are recognizable in the representations. We find a more elaborate form in the Dresden codex, where above the belt a piece is added, which covers the lower part of the body *h* (Dresden codex, page 14, below).

A departure from this generally customary mode of dress occurs in the case of one figure only, and that is the striding priest in the Dresden manuscript, pages 25 to 28, above. Exactly corresponding to the description which Landa gives of the priests' costume (Relacion, chapter 26), long strips of cotton reaching to the ground are fastened to the belt, which is of the ordinary shape, while a row of large feathers hang down over them, *a*, figure 121 (Dresden codex, page 27), and *b*, somewhat different (page 25). The upper part of this figure is naked, save for the elaborate neck ornament.

Plate XLV, number 5, the figure of a priest in the Yucatan collection (compare the description of this figure by Doctor Uhle in the Veröffentlichungen aus dem Kaiserlichen Museum für Völkerkunde, October, 1888, pages 15 and 16) affords a suitable object for comparison with the above-mentioned example of sacerdotal dress, the only one in the manuscripts. Instead of the cotton strips we have here an obvious stiff belt, as in the codices, below it an apron, which is open in front, just as in the manuscripts, *f* and *g*, figure 120. The pendent strips of cotton are missing, however. In the place of them we see the legs clad in a kind of feather-work breeches, nothing analogous to which occurs in the manuscripts or on the reliefs, unless we choose to compare the leg ornaments already described (see *e*, figure 118, and *f*, figure 119). Besides this, the upper part of the body is fully dressed in a feather shirt, which even has sleeves, a thing which occurs nowhere else in the codices nor apparently on the reliefs. Here, too, together with certain resemblances, we find striking differences. But we shall return to this figure farther on.[a]

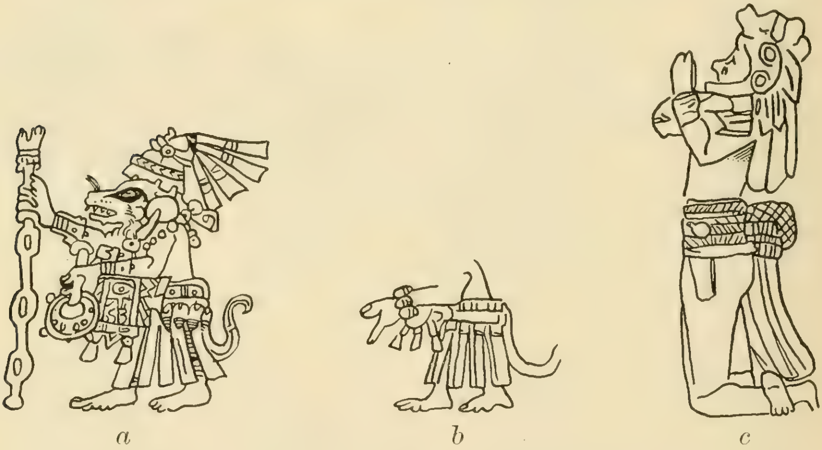

FIG. 121. Dress of the lower body, from codices and sculptures.

Still greater are the differences found by a comparison of the remaining clay figures in the Yucatan collection and the figures on the reliefs with the representations thus far described. The cotton strip described by Landa, occasionally occurring in the manuscripts, is very unusual on the Yucatec reliefs. It is unmistakably recognized in a representation at Kabah (*c*, figure 121, after Stephens).

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[a] See the standing figure on the bas relief in Stephens's Central America, p. 26. The belt there has the same decoration as in the above figure of a priest in the collection.

The often-mentioned belt is also frequently seen on the reliefs; both on the temple walls at Palenque[a] and in the statues at Copan this article of dress occurs, frequently combined with an apron, as in the Maya codices.

A cotton strip of a hand's breadth, such as Landa describes, and as undoubtedly occurs in the manuscripts, is scarcely to be found among the figures in the Yucatan collection, but, on the other hand, there is a very similar article of dress, that is, a wide loin cloth wound round the hips of the form,[a] seen in *a*, *b*, *c*, figure 122.

In the manuscripts this loin cloth sometimes so completely covers the legs of the sitting figures that it looks as if the figure wore trousers, " bragas y calcas ", according to Landa (see *e* and *h*, figure 120).

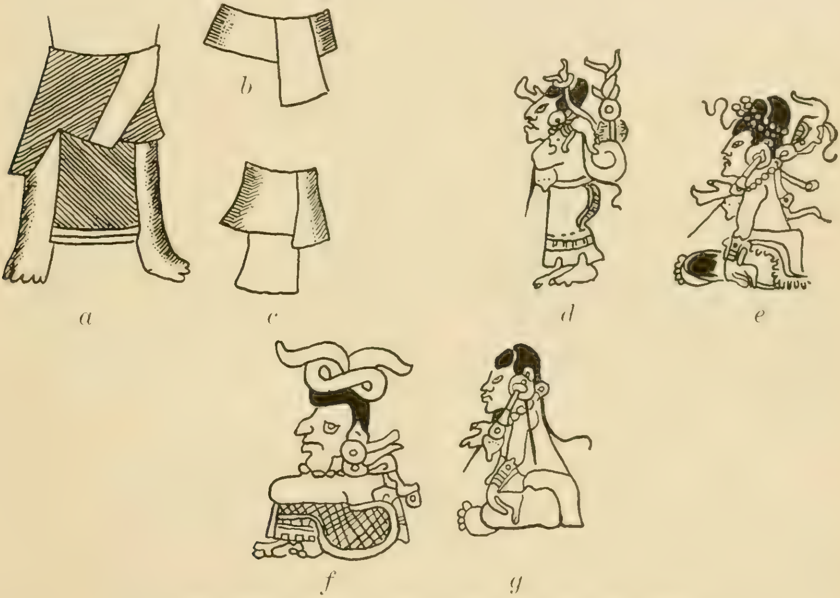

FIG. 122. Dress of females, from Dresden codex and monuments.

As a rule the lower part of the body of the clay images is very superficially executed, so that we often can hardly tell how it is dressed.

For women. According to Landa (see above), the Maya women wore a skirt from the hips down. Cogolludo says the same, and according to him this garment was called " pic ".[b]

In this respect all the illustrations agree. In the codices, on the reliefs, and in the Yucatan collection such a skirt forms a part of the women's usual attire. The representations at Palenque and Copan show us exactly the same thing. Such petticoats are very common in the Maya manuscripts (see *d*, figure 122, Dresden codex, page 17, above; *e*, same figure, from the Dresden codex, page 21, above and *f*, from Codex Cortesianus, page 35). They are almost always richly decorated and seem to have been an especially favored article of the weaver's and dyer's art among the Mayas. Especially distinct ornamentations of a very tasteful kind, quite recalling the Greek classic style, occur in a figure in the Troano codex, page 27, below (plate XLV, number 7). In another from the Troano codex (page 25, plate XLV, number 8) the skirt is shorter than is usually seen elsewhere in the manuscripts. The women of the lower classes, however, as well as the men, seem to have worn merely a simple cloth about their hips, examples of which are seen in the Dresden manuscript, as *g*, figure 122 (Dresden codex, page 16, below).

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[a] See the dress of the figure of a priest on two reliefs at Palenque; the well-known representation of the cross and the relief in casa n. 3, after Stephens. There, too, it consists of a wide cloth.

[b] Pic in Maya is fustan (fustian petticoat), according to Beltran de Santa Rosa Maria, Arte del idioma Maya.

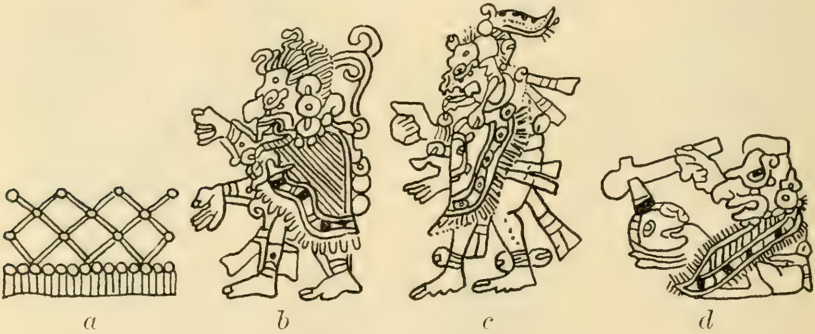

FIG. 123. Mantles from Maya codices.

Petticoats like those copied above from the manuscripts, and with similar ornaments, are worn, as already stated, by the female figures in the reliefs of the Yucatan collection. Here, too, the ornamentation often displays graceful and tasteful meander patterns. This article of dress seems to have been of like appearance and nature throughout Central America. It occurs as frequently among the reliefs at Palenque as among the idols of Copan, and the pattern in both places agrees exactly with *a*, figure 123 (see Stephens, Central America, number 7, statue at Copan, and number 34, bas-relief at Palenque). In old Mayapan proper (Yucatan) female figures are very rare among the architectural remains, but they are all the more abundant in the Yucatan collection, where the petticoats, as in the Dresden codex, usually reach to the ankles (see plate XLV, number 1).

DRESS OF THE UPPER PART OF THE BODY

For men. As a rule, in the manuscripts, the upper part of the body is bare, while elaborate necklaces with broad ornaments covering the breast occur, which in the drawings sometimes make the trunk look almost as if it were dressed. The cloak fastened on the shoulder, described by Landa, if we judge from the representations, can by no means have formed a part of the regular dress. A cloak of this kind is found, it is true, of similar shape to that which occurs in the Mexican manuscripts, but rarely, and then only on persons who evidently wear a costume peculiar to a certain privileged class. The same can be said regarding the figures in the Yucatan collection and in representations on the reliefs. The trunk is nude in far the greater number of instances. Moreover, the cloaks occurring in the manuscripts do not wholly correspond with the one described by Landa. They are not square (as they usually are in the Mexican manuscripts), but apparently oval, and are not fastened at the shoulder, but at the neck, either in front or behind, so that the mantle falls either over the back or over the breast. In Codex Troano-Cortesianus the latter is invariably the case (see *b*, figure 123, from the Dresden codex, page 25, below; *c*, figure 123, from the Dresden codex, page 27, below; *d*, figure 123, Troano codex, page 16*, middle, compare pages 15* to 17*, same place).

These cloaks, like the women's petticoats, are almost always adorned with gay patterns, which are reproduced in the representations. It is also characteristic of them that the hem is almost always edged with fringe, which in the more valuable cloaks possibly consisted of feathers.[a]

Strange to say, these cloaks do not occur at all on the Yucatec reliefs. Nor are they to be recognized in representations from other Central American ruined cities. We find articles of dress for the upper part of the body, but usually of quite another, often unrecognizable, shape.

What has been said above of the occurrence of cloaklike garments in the manuscripts holds good in the clay figures of the Yucatan collection. They are always an appurtenance of the dress belonging to a special rank. The collection contains several very remarkable examples of such, which differ in many respects from anything that we are accustomed to see on the reliefs or in the manuscripts. We have already alluded to the beautifully executed figure of a priest whose upper body is covered with a complete shirt (or jacket) with sleeves which apparently consists of feather work. Two other figures in the collection (see plate XLV, numbers 4 and 6) are still more striking. Both have a capelike garment, which, beginning at the throat, covers the arms and trunk. While we may perhaps still doubt, in regard to the above-mentioned figure of a priest, whether the costume is indeed of feather work or, possibly, of separate strips of cotton which are sewn together and lap over one another, any such doubt is precluded here by the fact that the feathers are indicated with perfect distinctness on one of these figures, by outlines like those of *a*, figure 124.

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[a] It is possible that this article of dress is identical with the cotton cloths mentioned by Cogolludo (Historia de Yucatan), called "tilmas", or "hayates", which were used as covers at night and as cloaks by day. The description, according to which the latter were richly ornamented and adorned with various colors, corresponds very well with the representations in the codices. On the other hand, this idea is contradicted by the fact that such mantles are represented so seldom and apparently only as garments of state at religious ceremonies.

It is highly probable that these figures also represent priests, but nothing analogous either to them or to the figure first mentioned is to be found in the manuscripts or on the reliefs.

Certain sitting figures in the same collection are equally remarkable. The trunk is covered by a mantle without any ornament, which leaves the upper part of the chest bare, and apparently consists of nothing else but a large round covering with a hole in the middle through which to put the head (plate XLV, number 3), a rather primitive article of dress, which, however, in the sitting figures shows a strong resemblance to the accompanying illustrations from the manuscripts (*c* and *d*, figure 123). It is possible that the singular form of this article of dress is only the result of a lack of artistic skill in the maker of these figures, and that it really represents one of those cloaks so frequently found in the Maya manuscripts and the Mexican codices. Andagoya speaks of a similar article of dress in Nicaragua (in Navarrete's Coleccion de los viages, etc.). He describes it as a sort of cape with a hole for the head, which covered the breast as well as the upper arm.

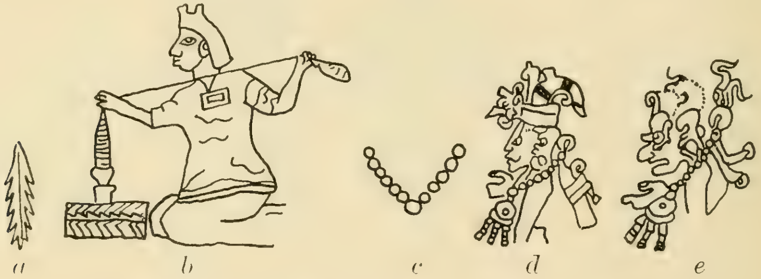

FIG. 124. Figures showing dress, feather work, and necklaces.

Otherwise, the upper part of the body is nude as a rule in the figures of the collection as well as in the manuscripts.

For women. While Landa states that in many parts of Yucatan the women wore an upper garment which covered the breast or a kind of jacket which was fastened at the waist by a girdle there is not a single female figure to be found in any of the manuscripts with the upper part of the body covered,[a] and even the blanket which, according to Landa, the women used to sleep under, and carried over the shoulder when traveling, is nowhere to be seen. This fact is all the more surprising because an upper garment is by no means unusual among women in the Mexican manuscripts (see *b*, figure 124, Mendoza codex, page 69, for a jacket answering to Landa's description).

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[a] Compare the figures Troano codex, pp. 15* and 16*, middle (men with mantles), with the figures, pp. 18*, 19*, and 20*, middle (women with skirts, without upper garments).

Nor do we find anything in the Yucatan collection which corresponds to Landa's account. No actual garment for the upper part of the body occurs here; there is only an occasional skirt, which comes just up to the breasts, but leaves them free. Nor do we find anything of the kind on the Yucatan reliefs, while a mantillalike garment occurs in the representations at Palenque, with the well-known pattern of crossed lines (*a*, figure 123) repeated so often in the women's dress seen in representations at that place and at Copan. A peculiar article of dress, seen scarcely anywhere else, is worn by the female figures on the well-known relief of the Cross and the similar one in casa number 3 (after Stephens) at Palenque. It covers the whole body from the throat almost down to the knees, but is otherwise difficult to define. Knotted and twisted portions of this garment seem to hang down on all sides. It is probably a garment of especially solemn character, only to be worn at religious ceremonies.

NECKLACES, COLLARS, AND EAR ORNAMENTS

This kind of apparel and ornament was, next to the head ornament, the most popular and manifold throughout the whole civilized region of Central America. Here again we find great similarity among the various antiquities.

Bead necklaces are very characteristic of the Yucatan representations of every variety, and this fact is all the more noteworthy because these neck ornaments of chains or beads are rare in the Mexican codices. In the Maya codices, among the reliefs, and on the clay images from Yucatan, almost without exception, we find on the contrary, strings of beads in the most elaborate and varied shapes. There seems to have been no Maya who did not possess such an ornament. Strange to say, Bishop Landa makes no allusion to this fact, while, judging from the antique remains, and especially from the manuscripts, we should expect that this ornament of all others would have struck him and would have been described by him.

The forms of these necklaces in the manuscripts very generally resemble those worn by the figures of the Yucatan collection. There is often a medal-shaped middle piece upon the chain, which lies on the breast. The simple form shown in *c*, figure 124, which appears in all the manuscripts, is most frequent in the collection. In the Troano and Cortesian codices this simple form is found almost exclusively (see *b*, *d*, and *g*, figure 120).

In the Dresden manuscript, on the contrary, very elaborate and varied forms are common, and we almost invariably find the above-mentioned tassel or locketlike middle piece with an additional ornament terminating in three ends, and a peculiar clasp behind (see *d*, figure 124, from the Dresden codex, page 10, middle, and *e*, page 15, below).

While this neck ornament is common in the Dresden codex, it occurs but seldom in the other manuscripts (see *a*, figure 125, from the Troano codex, page 18*, middle, *b*, figure 125, from Codex Cortesianus, page 12, below,[a] also examples in Codex Peresianus, pages 17, 21, and elsewhere).

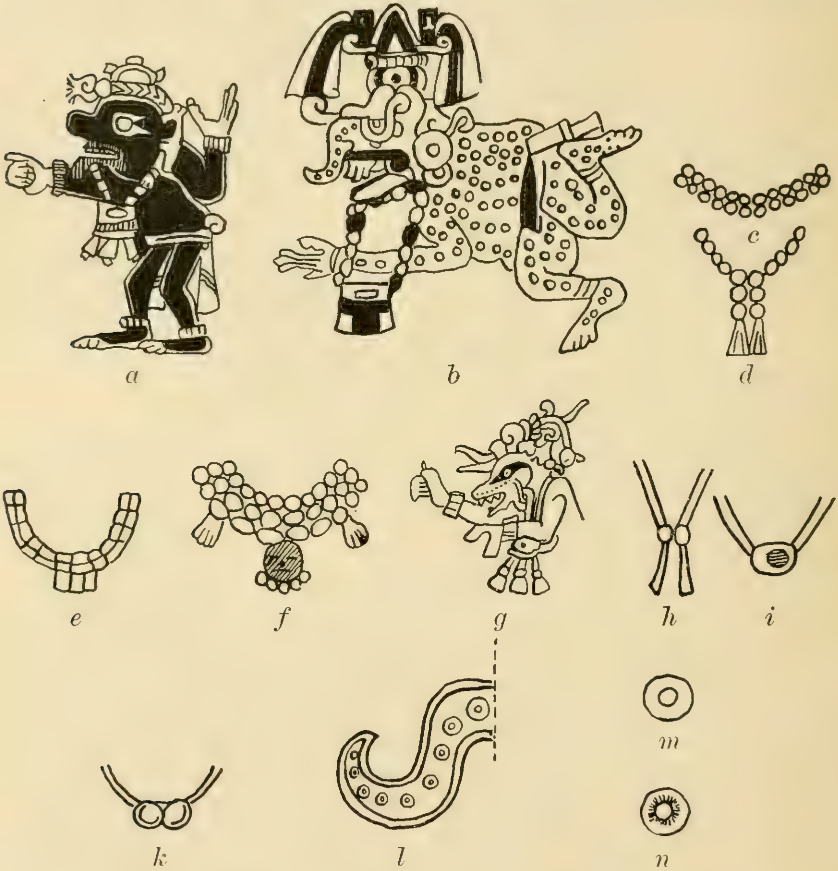

FIG. 125. Necklaces, ear ornaments, and so-called elephant trunk.

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[a] The head of this figure is particularly interesting, because it explains the remarkable ornament occurring so often on Yucatec buildings, the much discussed so-called "elephant's trunk". Close examination of this ornament shows that almost invariably the features of a face, rudely executed in flourishes, are to be recognized on the surface of the wall behind it. If we compare this ornament with the above copy from the Codex Cortesianus, there can hardly be a doubt that it represents the face of the god B (see my Göttergestalten der Mayahandschriften, p. 12) with the well-known big nose. The nose has exactly the same shape and decoration on the buildings as on the figure in the manuscripts (see *l*, fig. 125, the form of this ornament). There is not the least occasion for fanciful zoological speculations.

This kind of ornament was worn indiscriminately by men and women. The badges of certain priests or officials seem sometimes to have been used upon the tassels, as in the Dresden codex we find one on the figure of the death god, or his priestly representative, with the sign of death (*g*, figure 115, cimi; Dresden codex, pages 9, above, 10, above, and 15, middle).

In the Yucatan collection we have on various images the forms shown in *c*, *d*, and *e*, figure 125, of which the last is a particularly elaborate specimen, showing a medal similar to those in the manuscripts.

Instead of the chain we sometimes find (very seldom in the manuscripts) a sort of ribbon to which a tassel or medal is attached, as in *g* (Dresden codex, page 28, above).

The same thing occurs in the figures in the collection (see *h*, *i*, *k*).

Still greater points of resemblance occur in the ear ornaments, which often seem to have been combined with the necklaces. In the manuscripts, as on the Yucatec clay figures, a ring-shaped ornament is the rule. While among the latter it is often very simple (see *m* and *n*), in the codices it usually assumes a more complicated form. Almost all the figures show either one or the other of the two forms, which are given in *a* and *b*, or in *c*, *d*, and *e*, figure 126. The former is the rule in the Codex Troano-Cortesianus,[a] the latter in the Dresden codex. The latter form is not infrequently directly combined with the necklace and occurs after the same fashion on the clay figures: certainly a very noteworthy fact, for these neck ornaments are entirely wanting in the Mexican manuscripts. Compare the example from the collection (*f*, figure 126). The resemblance is evident and indubitable.

While in the Mexican codices collars prevail, in the Maya manuscripts, as we have said, necklaces are predominant. But collars occur also, in fact feather collars of the selfsame form that we find on the often-mentioned figure of a priest from the Yucatan collection (plate XLV, number 5), a stiff round collar of feathers standing out from the neck (see *h*, figure 126, Codex Cortesianus, page 32, above; *i*, Dresden codex, page 20, above; *k*, Troano codex, page 34; Codex Peresianus, page 15, and others having the form of this ornament on the figure of the priest, *l*[b]). Similar collars are very frequently found in the Maya codices on the figure of the death god, and where such a collar occurs the necklace found everywhere else is absent.

As a general thing these collars are infrequent. They seem to have been no everyday article of attire. A few variations occur in the manuscripts, for instance, in *m* (Dresden codex, page 10, below) and *n* (Troano codex, page 31, middle).

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[a] It also appears on the heads in the glyphic writing, as, for instance, in the inscription on a pottery vessel in the Yucatan collection (*g*, fig. 126).

[b] Strange to say, this figure wears no ear ornament. The collar is half broken off.

Lastly, we have a peculiar ornament in a picture of the death god, *o*, in the Dresden manuscript, page 10, above.

It seems to be a necklace of feather work, from which hangs the sign of the death god, cimi. The figure is also interesting because it distinctly shows us how the ear ornaments represented above (*c*, *d*, *e*, and *f*) are fastened in the ear, which is usually drawn disproportionately large in the codices (see *a*, figure 127).[a]

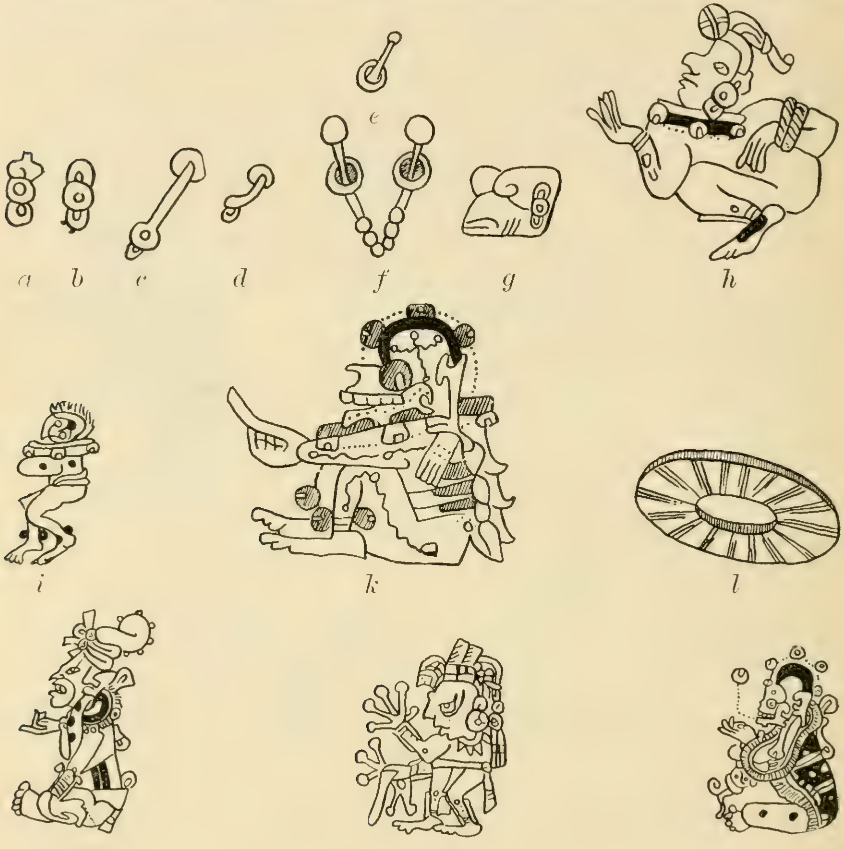

FIG. 126. Ear ornaments and collars.

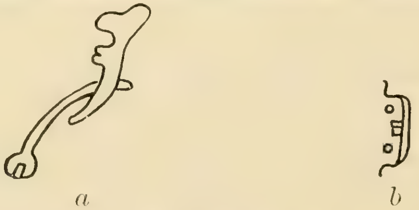

FIG. 127. Ear ornament and symbol.

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[a] The ear occurs in the text as a glyph in the form of *b*, fig. 127. Compare the representations of the act of piercing the ear in the Troano codex, p. 18, above.

In the Yucatec reliefs, on the contrary, we have quite different styles of collars, which have little resemblance to those of the manuscripts and the clay figures. They are usually far more elaborate and larger, and cover the shoulders like a shawl; they therefore seem to have consisted of some softer material than those represented above. On the other hand, necklaces are very unusual on the reliefs, while they appear more frequently on the figures from Palenque, and here, too, in familiar forms, as, for instance, with the addition of the locket-shaped middle piece. Generally speaking, the representations in the Yucatec reliefs exhibit a strikingly different type in this respect, as in many others.

HEADDRESS

The overloaded headdress, often most fantastically exaggerated and scarcely recognizable as such, is a characteristic feature of Central American representations. These headdresses are most colossal in the Yucatec reliefs, where they often develop into architectural ornaments pure and simple. Spanish authors record the fact that the ancient Mayas paid great attention to the fashion of wearing the hair. Bishop Landa says in chapter 20 of his Relacion: " They wore their hair long, like women. On the top they burnt a sort of large tonsure; they let the hair grow around it, while the hair of the tonsure remained short. They bound the hair in braids about the head with the exception of one lock, which they allowed to hang down behind like a tassel ".

"All the authorities agree ", adds Bancroft (Native Races, volume 2), " that the priests in Yucatan wore the hair long, uncombed, and often saturated with sacrificial blood. Plumes of feathers seem to have been their usual headdress ".

Here, too, we can only accept Landa's description with many reservations and as a very general characterization of the style of hairdressing when we compare this description with the existing antiquities. Among the latter, the various styles of ornamenting and covering the head and dressing the hair are so extremely numerous, and we find such manifold forms and fashions, that an exhaustive description of them would be an extensive work in itself. We must definitely accept the view that differences of rank in Yucatan found especial expression in the mode of dressing and ornamenting the hair, for only thus can we explain the countless different forms. Warriors and priests or persons of high rank and people of the lower class were, most probably, chiefly distinguished from each other by the style of wearing the hair. The rest of the dress was suitable to the climate, usually simple, and thus the favorite and carefully treated headdress afforded an opportunity for every kind of particularity.

We shall touch only upon the most important points of the extremely rich material before us. The hair partly bound about the head, partly hanging down long behind, as Landa describes it, is indeed not infrequently seen (compare *a*, figure 128, Codex Cortesianus, page 33, above, and *b*, figure 128, same place, 36, below, with *c* from the Yucatan collection). However, in most cases the head ornament is much more elaborate. We constantly find, as here, the hair bound up above on the head and surrounded with ornaments and feathers, while it hangs down long behind, intertwined with feathers and ribbons.

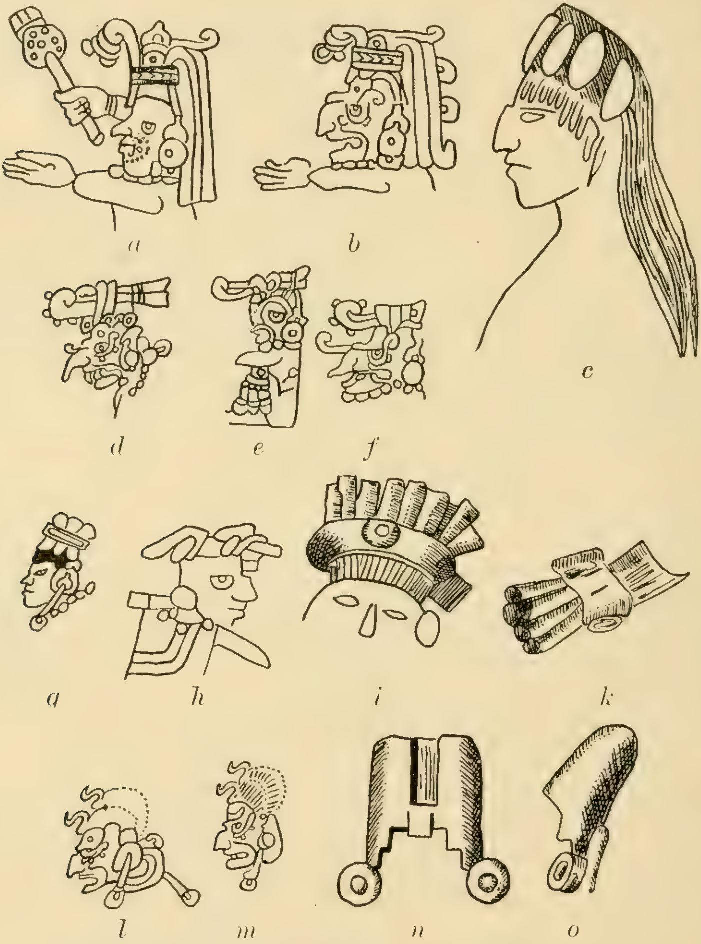
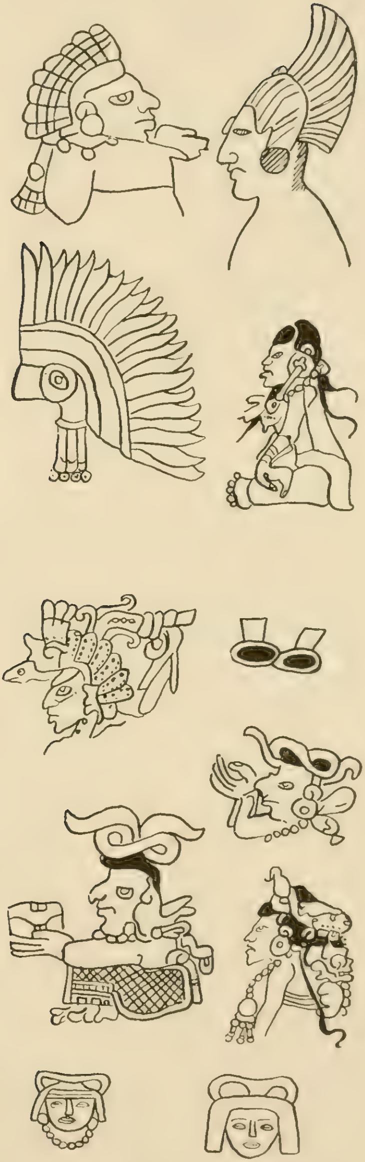


FIG. 128. Headdresses, from Maya codices and monuments.

A headdress consisting of a sort of bow or knot is most common in the manuscripts (*d*, Dresden codex, page 68, and *e* and *f*, Codex Cortesianus, page 11). Strange to say, it does not occur elsewhere, either among the reliefs or the clay figures; another striking pecul-



HEADDRESSES FROM THE CODICES AND MONUMENTS

iarity of the four Maya codices.[a] There are otherwise, however, many resemblances in the forms of hair-dressing between the manuscripts and the figures in the collection. Thus the headdress from the Dresden manuscript on page 19 above, *g*, is repeated exactly in a figure of the collection;[b] *i*, front view; *k*, side view.

A headdress very common in the Dresden manuscript is shown in *l*, page 27, and *m*, page 28, below. Compare also *g* and *h*, figure 120, and *b* and *c*, figure 123.[c] It has also an analogue in the Yucatan collection; compare *n* and *o* and the often-mentioned figure of a priest (plate XLV, number 5). These are only single instances, chosen at random; the forms are, as we have said, so multifarious that but very few obvious resemblances can be established. In the Yucatec reliefs the headdresses usually have enormous feathers, which hang down before and behind, showing a certain resemblance to many of the representations in the manuscripts, which, however, lies rather in the total effect than in separate details. The Palenque reliefs also show similar feather ornaments, but far simpler and more in accordance with reality than the Yucatec reliefs.

We may also mention what was undoubtedly the headdress of a warrior,[d] which we find in the Mexican manuscripts as well as in the Maya codices and on the clay figures. In the first of these it takes the form of *a* and *b*, plate XLVI (from the Mendoza codex). Compare with this, *c* (Dresden codex, page 60) and the head from a figure in the collection, *d*.

The headdress of the women is generally simpler than that of the men. The elaborate feather decoration is missing on them in the manuscripts, and in its place we have the hair itself arranged in long strands, which fall partly over the breast, partly over the back; *e* shows this arrangement of the hair that is peculiar to women, the most distinctly recognizable one in the Dresden manuscript.

Besides this, however, we have another form, in which the hair is arranged on each side of the head in loops having the shape of the figure 8. This arrangement of the hair occurs in all the Maya manuscripts and on the clay images of the Yucatan collection. The Mexican manuscripts also show us a similar puffing of the hair on each side of the head, which Spanish authors mention as prevalent in ancient Mexico. Compare the Mexican female figure above, *b*, figure 124, also some Mexican clay images in the Berlin Museum, which have the same style of hair-dressing as *f* and *g*, plate XLVI (Troano codex, page 24), *h* (Codex Cortesianus, page 35), *i* (Dresden codex, page 16), from the Maya manuscripts, and lastly, the two styles of wearing the hair of clay images in the Yucatan collection, represented in *k* and plate XLV, number 2.

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[a] See, however, the headdress so common in the Bodley codex, fig. 125. The Bodley codex bears a strong resemblance to Codex Troano-Cortesianus, so far as the representations are concerned.

[b] It is the figure with the singular facial decoration that has already been mentioned above.

[c] The similarity of this head covering with one common in the Egyptian representation, that with the Uræus serpent, is startling, and yet it is entirely fortuitous.

[d] Compare in regard to this headdress in use among the Aztecs, the comprehensive work: Das Prachtstück altmexikanischer Federarbeit aus der Zeit Montezumas im Wiener Museum, by Zelia Nuttall (in d. Abhandlungen u. Bericht. d. K. Zoöl. u. Anthrop.-Ethnogr. Museums. z. Dresden, n. 7, 1887).

Utensils and Kindred Objects

In conclusion, we will select a few specimens from the numerous representations of household utensils, weapons, vessels, and other objects portrayed in connection with the human figure. Any closer inquiry into these objects would far exceed the limits of the present article. The weapons, which are not uncommon in the codices, have many points of resemblance with those represented in the Mexican manuscripts; none are apparently to be found among the clay figures. The Mexican sword with obsidian splinters (maquahuitl) was also used in Yucatan, together with the small ax, which Landa describes, and of which he furnishes an illustration.[a] The sword is represented on a relief at Kabah.

The clay vessels found in the Yucatan collection are of the same general shape as those in the Maya codices. Compare the specimens *a*, *c*, and *e*, plate XLVII (from the Dresden codex), with *b*, *d*, and *f* (from the Yucatan collection).

So, too, a peculiar kind of tall, slender vessel, which usually appears in the manuscripts in connection with sacrificial rites (see particularly Dresden codex, pages 25 to 28), is found in its characteristic form in the Yucatan collection. Compare *g* (from the Dresden codex, pages 26 and 27; Codex Cortesianus, pages 6*, 7*, 40, and elsewhere) with the vessels, *h*, from the collection, which may therefore be regarded with certainty as sacrificial vessels.

Fans, which are not uncommon in the Mexican codices, occur also in the Maya manuscripts, and a clay image in the Yucatan collection holds a similar object in its hand, *i* (compare the Mexican fan, *k*). Similar forms are found in the Maya manuscripts (see *l*, from the Dresden codex, pages 25 to 28, above, and *m*, from the Troano codex, page 35, above). Another figure in the Yucatan collection has an object in the left hand of the shape represented in *n*. The representations of women weaving in the Troano codex, page 11*, show us that this article is a weaver's shuttle. There it has the form of figure 129.[b]

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[a] It has the same shape as in the manuscripts.

[b] Under this heading also belongs the Mexican spear thrower, the atlatl, found in various forms in the codices, which recently has been found in a variety of forms in the codices by Doctor Seler and Mrs Nuttall, who is about to issue a searching study of the subject as one of the publications of the Peabody Museum.

CONCLUSIONS

The results of this comparative study, which by no means exhausts the subject, and is only intended to emphasize the chief points sufficiently for the present purpose, are in many respects striking. One of the principal conclusions is: There is no single, uniform type among what is known as the Maya antiquities. The manuscripts form an independent group, the relief representations from the ruined cities of Yucatan a second, the clay images a third. Remains of the different groups are alike in many particulars, but not so much as if all the material sprang from a common source. The architectural remains in Yucatan must naturally be regarded as having undoubtedly originated with the ancient inhabitants of Mayapan. We have, however, already shown that even Bishop Landa did not consider it superfluous to furnish proofs that these ancient inhabitants were ethnologically identical with the inhabitants of Yucatan at the time of the conquest. And these very architectural remains bear a most striking resemblance, especially in the bas-reliefs, to Mexican antiquities, such as we do not find, at least not to the same extent, in the Maya manuscripts and in the clay figures. On the other hand, the type of the representations in the codices and of the clay figures agrees far better with that found in the antiquities of Palenque and Copan; but even here the differences are still too great to establish a belief in a common origin. It is evident that very divergent influences have been at work in the ancient culture area of Central America. Especially are traces of the influence of Mexican races, as, for instance, the Aztecs, plainly perceptible in Yucatan proper. Intercourse and commercial relations did exist between the Aztecs and the Mayas. Side by side with this influence emanating from the races on the northwest border, we also find another factor of civilization whose origin we may seek to the south of the peninsula of Yucatan. It seems to be the genuine, aboriginal source of Central American civilization, which reached its highest development among the Maya races. In contrast to the stiff, angular, conventional type of Mexican art products, we find, the farther we pursue this factor of civilization, softer, more graceful, and at the same time more realistic forms. Among the antiquities which show this influence are the remains at Copan and Palenque, the Maya codices, and a great part of the clay figures in the Yucatan collection. All these facts point to a region south of the Yucatan

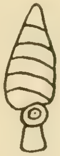

FIG. 129. A weaver's shuttle, from Yucatan.

peninsula as the true center of Central American civilization. There the origin of American glyphic writing is doubtless to be sought; there lie the roots of that ancient culture.

It is difficult to conjecture what race may have been the bearer of this civilization. The evidence points to its having been a branch of the Mayas. In Landa's time the flower of that ancient civilization was evidently long past; no trace of the earlier vigorous development remained; the old intellectual activity manifested itself but feebly; opposition to foreign influences was therefore extremely weak. Even then, according to the statements of Spanish authors, certain buildings in Yucatan already wore an air of belonging to a bygone time; some were probably even then deserted and buried in the primeval forest. There is hardly a doubt that even at the time of the conquest ruined cities existed south of Yucatan, in Guatemala and Chiapas, as they do to-day. Long before the coming of the Spaniards aboriginal civilization must have reached its highest point in that region, within a square approximately bounded by the fourteenth and eighteenth degrees of latitude and the eighty-eighth and ninety-second degrees of longitude. It is doubtful whether all the so-called Maya antiquities originated among the Mayas of Yucatan. The manuscripts perhaps came from the region indicated above (Tzental?), and undoubtedly also a large part of the antiquities in the Berlin Museum of Ethnology. They can scarcely have originated in northern Yucatan. They are evidences and relics of the influence of a higher civilization which flourished long before in the south.[a]

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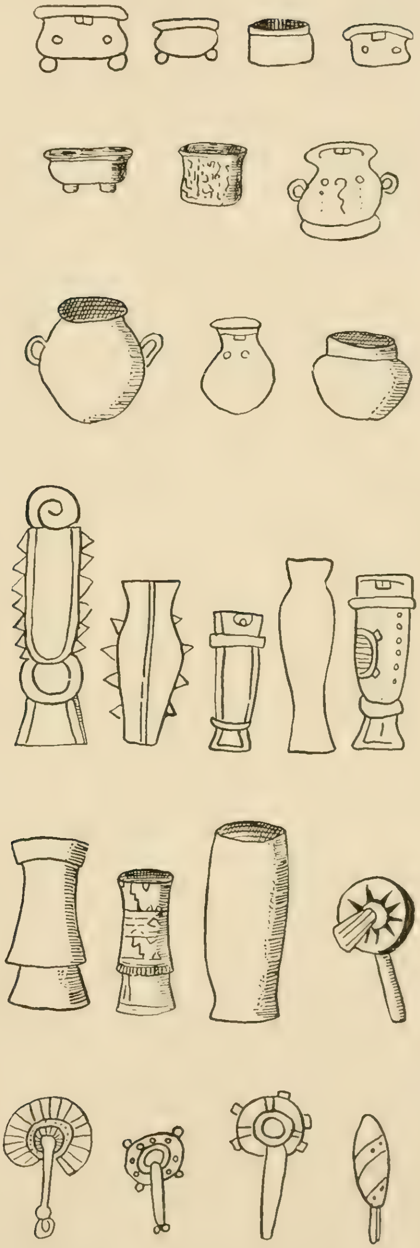
[a] Since the publication of this paper in 1890 important advances have been made in the field of Maya research. These are known to the specialists in Americanist lore. Nevertheless, these comparative studies may still prove to be of value to-day in their general results to the investigator because, although these general results themselves have as a whole been controverted or called in question, they have not been materially modified by later investigations. The main purpose of the foregoing essay, which was to present a comparative survey of the details of the Maya antiquities, will be fulfilled even to-day, so much the more since there has unfortunately been no augmentation of material worth mentioning, certainly no new discovery of antiquities that can alter essentially the results reached then. P. Schellhas, Berlin, February, 1905.



MEXICAN AND MAYA HOUSEHOLD UTENSILS

INDEPENDENT INDIAN STATES OF YUCATAN

BY

KARL SAPPER

INDEPENDENT INDIAN STATES OF YUCATAN[a]

By Karl Sapper

It is a well-known fact that the conquest of Yucatan offered the Spaniards great difficulties and that the adelantado Don Francisco de Montejo, although he fully understood the art of craftily turning the dissensions among the different Indian states to his own advantage, at length found himself forced to call on Ferdinand Cortes for aid. After the conquest of the peninsula was finally accomplished the Indians rose here and there to regain their freedom. The Spaniards suppressed the insurrections with brutal force, but could never dispel the hatred toward their white oppressors which, even to this day, smolders in the hearts of the Mayas and manifests itself from time to time in a renewal of bloody insurrections, like those which took place in the middle of the last and of the present century (1761 and 1847). The latter rebellion has had a lasting influence on the political development of the peninsula, and furnishes a key to the comprehension of the peculiar conditions which exist to-day. For this reason I will enter into a somewhat detailed discussion of them here.

The movement began among the eastern tribes, who were soon joined by those of the south; a large number of villages were destroyed, and in the year 1848 Bacalar,[b] the last important place of the Mexicans in southern Yucatan, at that time a city of more than 5,000 inhabitants, also fell into the hands of the eastern Indians under Venancio Pec, Juan Pablo Cocom, Teodoro Villanueva, and others. In the following year (May 3, 1849) the Yucatecos, under Colonel Zetina, succeeded indeed in regaining possession of the city, but in June of the same year the eastern Indians, under Jacinto Pat, reinforced by the southern Mayas of Chichanha, under José Maria Tzuc, made another vigorous attack on Bacalar, and were repulsed only with difficulty. The siege lasted for years, and was only interrupted when the Mexican garrison received large reenforcements.

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[a] Globus, v. 67, n. 13.

[b] Bacalar, originally called Bakhalal, was founded in 1545 by Don Melchor Pacheco. Concerning the history of this place see the article "Bacalar" in The Angelus, Belize, v. 9, 1893, pp. 48 and following.

It was not until Gen Don Romulo Diaz de la Vega assumed command in Yucatan that the war was carried on with greater energy by the Mexicans. This general marched by way of Chan Santa Cruz, the "sacred city" of the eastern Indians, to Bacalar, where he arrived on March 1, 1852. The southern Indians, whom the Mexicans had defeated, now offered to negotiate for peace with the Yucatecos, which enraged the eastern Mayas, who turned against them, unexpectedly attacked their principal town, Chichanha, and almost entirely destroyed it. But soon afterward (July, 1852) Diaz de la Vega surprised the principal town of the eastern Indians, Chan Santa Cruz, which had been fortified in the meantime, and in this engagement the dreaded chief, Venancio Pec, and his adjutant, Juan Bautista Yam, fell. The Mexicans, however, were not able to achieve a permanent victory over the eastern Mayas, to whom, in the year 1858, they finally lost Bacalar, which has now become an important base of operations and rallying point for these Indians. In 1871[a] the Mexicans made another armed incursion into the territory of the eastern tribes, again captured their principal city, Chan Santa Cruz, and again withdrew without the slightest permanent success. After the withdrawal of the Mexican troops the Indians quietly returned to their former habitations, and occupy to-day the same territory that they formerly occupied. From time to time they make predatory expeditions into the Mexican territory of Yucatan or into the territories of the southern tribes; but their military operations no longer aim at great enterprises, and seem to be directed only to the occasional acquisition of rich booty.

Thus, while the eastern tribes have stood uninterruptedly on a war footing with the Mexican Government since the year 1847, the chiefs of the southern tribes, José Maria Tzuz, Andres Tzima, and Juan José Cal, concluded a treaty of peace as early as 1853 with the Mexican agents, Doctor Canton, Colonel Lopez, and P. Peralta, through the instrumentality of the English superintendent at Belize, Ph. Ed. Woodhouse, the conditions of which were recorded in both the Spanish and Maya languages. Unfortunately, I have not been able to examine the terms of this treaty; but the conditions actually existing indicate that full independence in the conduct of their internal affairs (civil and judicial administration, etc.) was guaranteed to the Indians, while the latter formally recognized the suzerainty of Mexico, and their caciques have to be confirmed by the Mexican Government, that is, the gobernador of the state of Campeche.

The southern tribes are divided into two distinct states, whose chief towns at present are Ixkanha, in central Yucatan, and Icaiche, in southern Yucatan. Both states, in the main, have faithfully kept their treaty with Mexico, but in 1869 Mexican troops were obliged to enter the district of Ixkanha to suppress an insurrection of the Indians under General Arana, the brother of Gen Eugenio Arana, now in office. On the other hand, both states have had to repel occasional incursions of the eastern Mayas, who have been hostile since the conclusion of peace in 1853, and thus the southern Indians have served as a bulwark and outpost, as it were, for that portion of the state of Campeche which is under Mexican authority.

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[a] See A. Woeikof, Reise durch Yucatan und die süd-östlichen Provinzen von Mexiko in Petermanns Mitteilungen, 1879, v. 25, p. 203.

Among the Icaiche Indians, who retreated farther southward after the destruction of Chichanha, the warlike spirit once roused would not be quieted, and manifested itself in numerous raids into the territory of British Honduras, where at one time the Indians advanced as far as the neighborhood of the city of Belize.[a] In 1868 the Icaiche Indians, under their leaders Marcos Canul and Rafael Chan, occupied the city of Corozal, but withdrew through fear of the Santa Cruz Indians; and in 1872 the warlike Gen Marcos Canul attacked the city of Orange Walk, but was fatally wounded during the siege by a Swiss named Oswald; whereupon the Indians withdrew. The British Government complained to the Mexican Government of the repeated Indian invasions, and when the Mexicans explained that the Icaiche Indians were not under Mexican authority, but were an independent tribe, the English pointed out that the leaders of the Indians were Mexican generals. The protest, however, was not followed up, since the Icaiche Indians made no more raids into British territory after Canul's death, neither under Rafael Chan, Canul's successor, nor under the excellent Santiago Pech, nor under the present cacique, Gen Gabriel Tamay. At present, indeed, great warlike enterprises on the part of the Icaiche Indians are quite inconceivable, for their number has been continually reduced by war, rum, and pestilence, and in the year 1892 virulent smallpox and whooping-cough epidemics swept away about half of their number, so that now the entire population of the once feared independent Indian state can be estimated at only about 500 souls. Nevertheless, in Icaiche, a few Indians are always stationed as sentinels in a special hut called the cuartel ("barracks"), and in the house in which I lived during my residence there five loaded repeating rifles hung on the crossbeams of the roof, a sign that the Icaiche Indians are always on their guard against the Santa Cruz Indians, who, in fact, a short time before (during the rule of General Tamay) had made an unsuccessful attack upon the village.

In Ixkanha there are a larger number of soldiers on guard, day and night, in the barracks, under the command of a captain, and although they do not wear a uniform any more than do the Indians of Icaiche, they are a somewhat nearer approach to disciplined military, inasmuch as they use drum and trumpet calls, etc. In the district of Ixkanha the population has also diminished, compared with its former number, especially through smallpox epidemics and owing to an utter lack of good medical aid, and a few years ago Gen Eugenio Arana ceded the important village of Chunchintok to the state of Campeche. Nevertheless, the population of the independent territory of Ixkanha is probably about 8,000.

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[a] See, respecting these Indian raids, A. R. Gibbs, British Honduras, London, 1883.

At the beginning of the rebellion the population of the Santa Cruz territory was stated to be about 40,000; but since then the number has also greatly diminished, and is estimated by those familiar with the country at 8,000 or 10,000 souls. Indeed, it seems as if the depopulation of the forest regions of the peninsula (eastern and southern Yucatan) were constantly progressing, although it is probable that even before the conquest these regions were more scantily populated than the drier and more salubrious districts in western and northern Yucatan. The population of Chan Santa Cruz is chiefly confined to the strip of territory between lake Bacalar and Ascension bay, for the fierce and long wars have resulted in an ever-increasing concentration of population on the part of the eastern Indians and also on that of their enemies, in consequence of which uninhabited tracts of land lie between the two factions, in which the former roads have been rapidly overgrown and rendered impassable by the luxuriant forest vegetation. Even though Indians can use these overgrown roads in case of need in single file, the Santa Cruz Indians will always be obliged to open new roads for incursions on a larger scale, which will serve to warn the inhabitants of the threatened district well in advance.

The state of civilization of the independent Mayas is low. There is no educational system at all, and although for Ixkanha, which is probably more directly dependent on Campeche than Icaiche, owing to its closer proximity to it, the position of schoolmaster is provided for in the state budget of Campeche, nothing is gained by it, since no candidate ever applies for the position. Maya is exclusively the language of common intercourse, and in each of the three independent districts the clerk who is appointed by the general as secretary and interpreter is the only man in the state who speaks Spanish well and can also read and write a little. In ecclesiastic matters the Mayas of Santa Cruz are dependent upon Corozal, those of Icaiche upon Orange Walk, and those of Ixkanha upon the neighboring villages of Campeche. In Ixkanha, it is true, I saw in the church a smoothly shaven Indian, not otherwise distinguished from his fellows, who, morning and evening, conducted religious services, consisting largely of song, in the Maya tongue; but he was evidently not a genuine priest.

The public and private buildings of the independent Mayas, without exception, are thatched, wooden huts, such as are customary elsewhere among the Indian inhabitants of the peninsula. The houses of sun-dried brick or stone which existed before the rebellion are either destroyed or have fallen to ruins, and in Santa Clara Icaiche, for example, only the numerous foundation walls and cellars still recall their former existence.

The dress, mode of life, and occupations of the independent Mayas are very simple, and in this respect the general is in no wise distinguished from his subjects, except that he keeps saddle horses in accordance with his greater wealth.

In dress the independent Indians scarcely differ from the rest of the Mayas. The women wear a white cotton skirt and a white guipil of the same material reaching to the knees, which is often ornamented with red embroidery around the hem and the neck of the bodice. The hair is gathered in a knot at the back of the head. Their ornaments are large gold earrings, while necklaces, so popular among the Indian women elsewhere, are seldom worn here. The men wear white cotton trousers and shirts, straw hats, and sandals, which are fastened to the feet with cords. The Indians cultivate the more important plants for food, luxury, and textile fibers; raise cattle, swine, and poultry; spin and weave their clothing and braid their straw hats and hammocks, etc., so that they are obliged to import comparatively few articles, only arms, ammunition, salt, ornaments, and the like. The products of the chase are of great importance to the household of the Indians of Icaiche and Santa Cruz, who live in the forest regions. The chase is of less importance to the Mayas of Ixkanha, who live in the region of the dry brush-covered plains, and border only on the south and east on the region of unbroken primeval forests.

A few English have settled in the district of Chan Santa Cruz, and a few English and Yucatecos in the district of Icaiche for the purpose of cutting mahogany and logwood. For every ton of wood that they export they pay a certain sum to the general of the district, and out of this income he meets the public expenses, such as the cost of arms and ammunition and the salary of the clerk. Any surplus remaining seems to belong to the general himself. There are no taxes or duties. As the Ixkanha district is nowhere contiguous either to the sea or to navigable rivers nor is intersected by highways, the logwood, which is present in considerable quantities, can not be made marketable. On the other hand, the people collect a good deal of chicle, a kind of gum obtained from the milky juice of the chicosapote. I do not know from what source the public revenues of Ixkanha are derived.

The Indians of Santa Cruz trade chiefly with Corozal, the Mayas of Icaiche with Orange Walk, while the trade of the people of

Ixkanha is chiefly with Campeche. A short time ago, it is true, General Arana had a direct bridle path cut from Ixkanha, by way of Chuchanha, to Santa Cruz on the Rio Hondo, and to Orange Walk, for the purpose of reviving the direct trade with the British colony and the once active carrying trade from there to Campeche; but as this route passes near the territory of the Santa Cruz Indians and the trading caravans are therefore in danger of highway robbery, and as most of the imported wares are at present not appreciably cheaper in British Honduras than they are in Campeche, very active traffic on this road can not be expected.

Commercial relations have a decided influence upon the monetary system of the independent Maya states. Since in British Honduras the small coins of Guatemala as well as Chilean and Peruvian silver dollars are mostly in circulation, these coins are also most in use in the districts of Santa Cruz and Icaiche. In the Ixkanha district, on the other hand, Mexican money is the only currency; but when some years ago the old fractional currency was discarded in the Republic of Mexico and a new one based on the decimal system was adopted, the Ixkanha Indians did not conform to the innovation, but continued to use the Mexican and old Spanish medios and reals, which long ago had been withdrawn from circulation in Mexican territory.

The office of cacique is not hereditary in any particular family, but at the death of the general the next below him in military rank, the commandant, advances to the position, while at the same time the senior captain is promoted to the rank of commandant, etc. During the absence of the general the commandant acts as his representative. The general has supreme command in war, and he fills the office of judge, for which reason the caciques of Ixkanha and Icaiche, when they are confirmed in office by the gobernador of Campeche, are as a matter of form officially appointed to the position of jefe politico and comandante de armas as well as to that of judge. Both generals use a stamp which bears, besides the Mexican eagle, the inscription Pacificos del Sur, in accordance with the customary division of the independent Mayas of Yucatan into the Indios sublevados pacificos ("peaceful insurgents") of Ixkanha and Icaiche, and the Indios sublevados bravos ("fighting insurgents") of Chan Santa Cruz.

The general seems to be in some measure answerable to the popular assembly for his actions, in so far as these do not directly relate to military matters or to his judicial office, as I think I may infer from some remarks made by the clerk of Icaiche. Even after General Tamay had given me permission to travel in his district I had to leave behind me in Icaiche a copy of the circular addressed to the authorities of the Republic which I had obtained from the ministry of the interior, so that the general could have in this document a justification of his actions before his fellow citizens, who had been called to meet in a popular assembly on the day after my departure, March 1, 1894. If I had not come to Icaiche as an official of the Mexican Government, I should in all probability have been refused permission to pass through this territory.

The general of the Santa Cruz Indians has, as I gather from my inquiries, the same authority as the chiefs of the Ixkanha and Icaiche Indians. On the whole, the conditions in the three independent Maya states are almost identical.

Among the independent Mayas military service is compulsory; every man capable of bearing arms is obliged to perform military duty and is drafted for sentinel duty. The firearms in use are quite miscellaneous; modern repeating rifles are seen side by side with heavy old-fashioned muzzle-loading muskets. In general, the independent Mayas are considered good shots and courageous, efficient soldiers, skilled in the strategems of war. The Mayas who accompanied me as guides through the interior of Yucatan always carried their shotguns on their shoulders, loaded and cocked, with percussion cap on, and usually with great promptness brought down the game which crossed our path.

The administration of justice is prompt and summary, but it is, I believe, very conscientious, in favorable contrast to the dragging, uncertain methods of Mexican courts. The accused is either set free or flogged or, in serious cases, among which, as I was assured, rape is reckoned, he is shot. There are no prisons and no punishment by imprisonment.

The existing laws are strictly enforced. I myself experienced a slight proof of this, manifested in a logical, though somewhat petty, decision of the authorities. I had obtained in Icaiche three Mayas as guides and interpreters and had made a legal contract with them before the clerk of Icaiche, according to which they were to accompany me to Ixkanha, receiving in advance half of the pay agreed upon, the rest to be paid at Ixkanha. When we reached Ixkanha, the three Icaiche men voluntarily proposed that for a certain sum they should accompany me still farther to the railroad station, and that I should there pay them the whole amount. To this arrangement I agreed. The Indians of Icaiche and Ixkanha are compelled to have passports, and therefore my Icaiche men could not journey farther without the express permission of the Ixkanha authorities. As General Arana was absent, my guides had to transact their business with the commandant, the contract I have mentioned serving to prove their identity. After a while I was also summoned, and the commandant informed me through his interpreter that I had not fulfilled the contract, since the Icaiche Indians had not yet been paid. Although they did not in the least wish it, I nevertheless hastened to pay them, while the commandant looked on attentively. He then informed me that a new contract might now be made. He conferred with the Icaiche Indians, communicated their conditions to me through his interpreter, and when I declared myself satisfied with them, the clerk was instructed to draw up the contract and to sign it "in the name of General Arana", upon which the Icaiche Indians, after the proceedings had lasted about an hour, received permission to accompany me farther. Although the whole affair was of no importance whatever, I was glad to observe how much trouble the commandant took to protect against possible fraud the Indians who on their part did not in the least distrust me, and how quietly and straight to the point the whole transaction was conducted. The mistrust of foreigners is very easily explained when one knows how frequently the Indians are defrauded and cheated of their stipulated pay by the half-breed element of the population.

As to the character of the independent Mayas, I can make an almost wholly favorable report from my own experience. Having come from Honduras, where the indolent negro and half-breed population, spoiled by the too liberal laws, can often be kept only with difficulty to the fulfillment of engagements into which they have entered, I was particularly impressed by the reliableness of these Mayas, by the punctuality with which they fulfilled a promise once given, and by the fidelity which they showed to me on my journey. My Maya guides freely shared their hunting booty with me and the bearers who accompanied me from Guatemala. Everywhere, even in the most isolated hut, we found hospitable entertainment. Family life was peaceful and quiet, wherever I had an opportunity to observe it, and although the Mayas are somewhat reserved and more silent than the tribes of Guatemala and Chiapas, they are by no means of a sullen disposition, but, on the contrary, very quick to appreciate a harmless jest. It is often said of the Mayas that they are honest in important matters, but that they readily steal trifles; but I have never had the least thing stolen from me during my travels in Maya territory. On the other hand, drunkenness is a prevailing vice; and I can believe the accusation of cruelty against the Mayas, the more readily as from my own observation I judge that a certain trait of cruelty is peculiar even to the mildest of the Central American Indians. The bloodthirsty cruelty and warlike readiness which the Santa Cruz Indians in particular evince in their expeditions have made their name exceedingly feared, and have caused the generally accepted report of their great numbers and invincible armies.

This reputation and the slight commercial relations of the independent Mayas are probably the principal reasons why scientific travelers so seldom visit these regions and why their topography and peculiar political conditions are so little known. Engineer Miller, the account of whose travels in the Proceedings of the Royal Geographical

Society, 1889, is unfortunately not accessible to me, was the first European since the rebellion of 1847 to visit Chan Santa Cruz, the chief city of the eastern Mayas, and toward the end of 1893 two Englishmen, Mr Strange and Mr Bradley, passed through the same village, at that time almost depopulated, on their way to see the chief of this tribe at his place of abode, the neighboring Chanquec.[a] I could ascertain even less concerning southern Yucatan than concerning the Santa Cruz territory when at the beginning of the year 1894 I intended to advance through that region to the civilized northern portion of the peninsula. Orange Walk was the first place where I could obtain fairly accurate information regarding the route to be followed. Unfortunately, I am not permitted in this article to use my itinerary maps, and therefore am restricted to an approximate location of places. As the basis of my sketch map I have used the " Map of the Peninsula of Yucatan, based mainly on the Mapa de la Peninsula de Yucatan of 1878, compiled by Joachim Hübbe and Andres Aznar Perez, and revised and enlarged by C. Hermann Berendt ", given by Dr A. Woeikof in Petermanns Mitteilungen, 1879, plate II. From this map I have copied without change the comparatively well-known northern and western part of the peninsula, but have omitted the details, because the latter, based merely on hearsay, are for the most part very unreliable. On the other hand, I have added the railroads.

I have given the location of the ruins, as far as they are known to me, owing to the great interest attached particularly to those of Yucatan. I have been able to make some not unessential corrections in regard to the south and east of the peninsula. At Icaiche, where Berendt's map gives a lake, there is no large permanent body of water. According to the information which I received, the Aguada of Holauolpech is only about 150 to 200 meters across. The connected lakes of Chonil and Chacanbacab, with a width of about half a legua, are together 2 leguas in length. The Laguna Corriente and the lake of Olchem are each 4 leguas in length. I have inserted the salt lake of Chichankanab in accordance with the verbal statements of Mr E. Thompson, of Merida, who has recently measured it. The largest of the three narrow water basins, probably connected at high water, is 5¾ leguas in length. As the interior of Yucatan is very scantily populated and many settlements were forsaken or destroyed in consequence of the rebellion and the war following upon it, many villages and roads no longer exist which, as a rule, are still marked on the maps. According to my information and experience, only the following important roads are still extant in the southern and eastern parts of Yucatan: (1) The road from Peten to Yucatan, which divides into two branches at Concepcion; one branch going by way of Convuas to Champoton, the other by way of San Antonio and Tubusil to Campeche; both can be traversed on horseback. (2) From Icaiche, which can be reached from Belize either by way of Orange Walk and Corosalito, or by way of El Cayo and Caxuvinic, there is a road over Halatun to Ixkanha, which is little traveled and can be used only by pedestrians and beasts of burden. The road which once led from Icaiche over Xaibe to San Antonio is now overgrown. (3) A bridle path leads from Orange Walk, by way of Santa Cruz, on the Rio Hondo, to Ixkanha. From there a direct road leads over Xul to the railroad station Oxkutzcab and another runs by way of Chunchintok to Iturbide or to Tzibalchen and Campeche. (4) A bridle path leads from Bacalar to Petcacab, and thence through populated territory, by way of Chunox, to Santa Cruz la Grande and Chanquec. Foot paths, but seldom used, lead from the district of Santa Cruz to the neighboring inhabited regions. The topography of the peninsula of Yucatan, apart from that of the seacoast, is still very defective, and therefore I hope that the modest, approximate corrections presented by my sketch map, which is intended only for general orientation, will not be deemed quite without value.

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[a] The two Englishmen had gone there as envoys to quiet the Santa Cruz Indians, who had been aroused by political news recently received, namely, that the British Government had concluded a boundary treaty with the Mexican Government on July 8, 1893, in which, among other things, the English bound themselves to prohibit the selling of arms and ammunition to the independent Mayas. This stipulation aroused such dissatisfaction among the Santa Cruz Indians that a raid on Corozal was seriously feared. However, a large part of the Mexican people claim the northern section of British Honduras, including Belize itself, as Mexican territory, and on this account condemned the boundary agreement; hence the Mexican Senate, in deference to public opinion, refused to ratify the treaty.

TWO VASES FROM CHAMA

BY

E. P. DIESELDORFF, EDUARD SELER,

AND

E. FÖRSTEMANN

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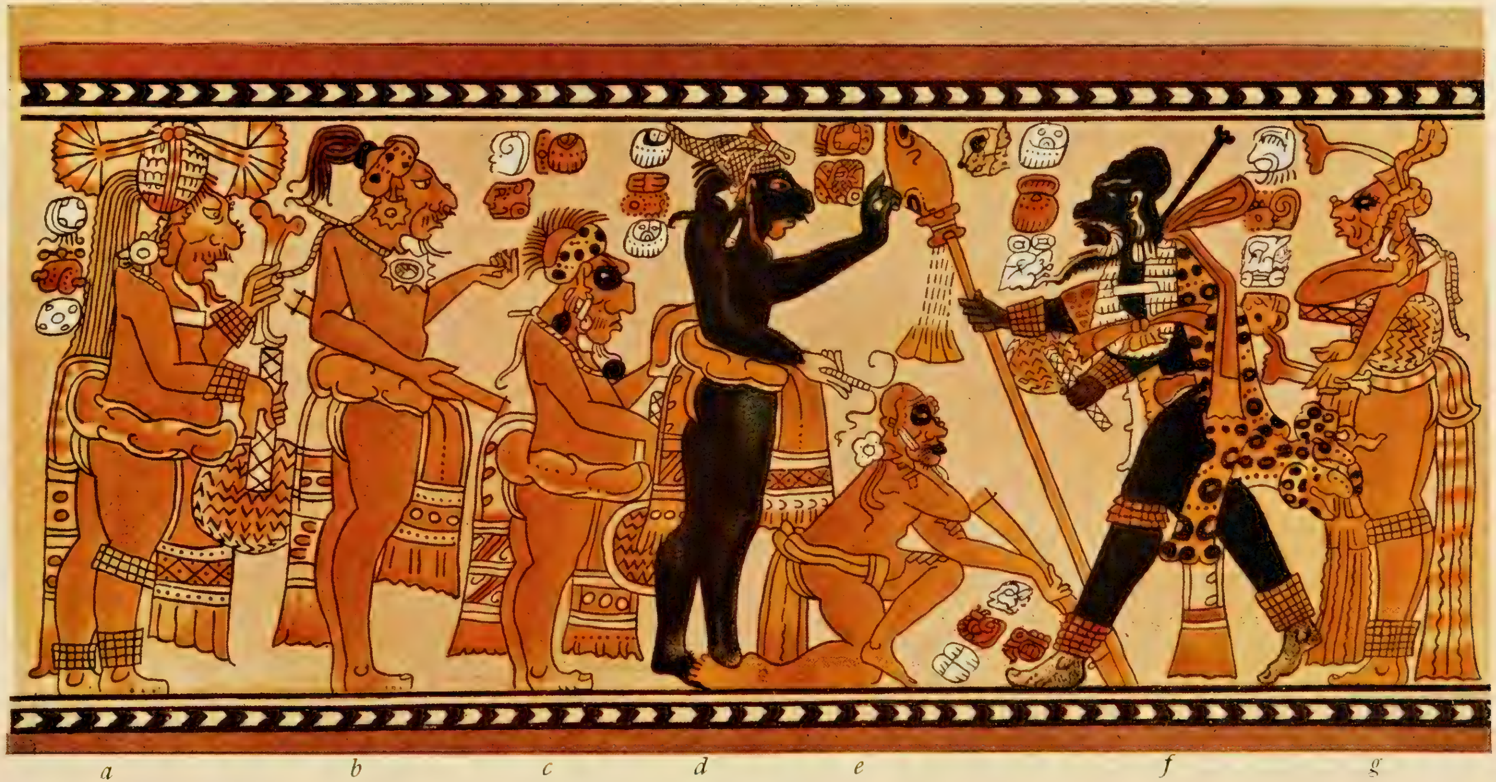

DESIGN ON A VASE FROM CHAMÁ

A POTTERY VASE WITH FIGURE PAINTING, FROM A GRAVE IN CHAMA[a]

By E. P. Dieseldorff

A notable discovery has recently been made in the Chama valley, known to us through Verhandlungen der Gesellschaft für Anthropologie for 1893, pages 375 and 548. In the excavation of the northwestern temple mound of the upper plaza on the left bank of the Salta river a grave formed of stones was discovered, nearly 8 feet below the surface, containing several pottery vessels, the most important of which I borrowed for a short time in order to make the accompanying drawing (plate XLVIII). The original is now in the United States, where it probably figures as one of the chief ornaments of some drawing-room.

When I first began my excavations in Chama, in 1892, I began to explore the hill in question, but was forced to abandon work because the owner forbade further search, in the belief that the articles found were of great money value.

I observed then that, just as in the northern mound of the lower plaza (described in Verhandlungen, 1893, page 376), about 3 feet below the surface there was a layer of resin about 6 feet broad and one-half of a foot thick, in which a quantity of small broken sacrificial plates were mingled with bits of burnt stone beads and polished disks of iron pyrites, which I recognized as the remains of a burnt offering to the god of the north.

Unfortunately, no notes were taken at the time of the discovery of the grave, but I heard that various pieces of jadeite were found among the pots, but no remains of bones, which is explained by the fact that the tomb had partially fallen into ruins.

The pottery vase is cylindric; its height is 23.5 centimeters, and its diameter at the top and at the bottom is 14.8 centimeters, while the sides are 4 millimeters and the bottom 5 millimeters thick. In the colors used, in polish and border decoration, it corresponds to the vases described in Verhandlungen, 1893, page 548, except that the ground is white. It is well preserved, and does not seem to have been used before burial.

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[a] Ein bemaltes Thongefäss mit figürlichen Darstellungen, aus einem Grabe von Chamá. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, pp. 372 and following, published in the Zeitschrift für Ethnologie, 1894, pt. v.

This time, however, the picture is essentially different. Thus far we have only met with paintings where one figure appears twice on the same pot, with slight variations; on this vase, on the contrary, we have a group of seven persons taking part in a common action. This is no conventional design, but a painting which possesses life and shows an amazing degree of artistic skill. It seems to represent some religious ceremony which was celebrated at the completion of a certain still undetermined period of time, and at which human sacrifice was performed. It ought to be possible, however, to determine this period, since the glyph referring to it occurs on the monuments of Palenque and Copan. Unfortunately, it has not thus far been possible to collect sufficient accurate material for such comparisons, and yet it is of the utmost importance for the decipherment of the glyphs that the inscriptions on stone should be made accessible to all. The only student who has made this his life task is the distinguished Englishman, Mr A. P. Maudslay, who for many years has studied the ruins and collected extensive material, which he is gradually publishing in his work, Biologia Centrali-Americana, issued in London. Thus far four volumes have appeared, which treat of Copan and Quirigua, and which should be consulted by all who are interested in Maya investigation. Science owes Mr Maudslay a debt of gratitude for his generous labors, to which he is devoting much care and expense. It is to be hoped that others may soon follow who will share in these researches, but wealthy institutions and governments are particularly called upon to undertake this work. In Germany we possess the most valuable Maya manuscript, and our scholars have taken the most active part in deciphering it; but, on the other hand, almost nothing has been done on the part of Germany toward collecting fresh material and promoting researches which give such rich returns when conducted on the spot. The British Museum, on the contrary, as soon as space can be found will arrange a Maya department in which the plaster casts prepared by Mr Maudslay are to be placed, and the Peabody Museum has leased the ruins of Copan for eight years more and has already begun excavations, the results of which will, it is hoped, very soon be published.

Meanwhile some of the ruins, especially Quirigua, past which the new Guatemalan railroad is to be carried, will soon be completely destroyed. If Germany desires to take part in these researches a beginning must be made at once.

I will now proceed to a description of the picture. I will designate the Indian standing in the left-hand corner by *a*, the next by *b*, and so on. An elderly Indian, who has been chosen for the sacrifice, kneels in the center; a black personage of rank advances toward him from the right, holding a lance and apparently demanding his life with bloodthirsty vengeance, while another stands on the left, evidently trying to pacify his opposite neighbor. About this main group stand four Indians who take no active part in the proceedings, and seem more like subordinates, upon whom the execution of the sacrifice devolves. Each of them has a strongly marked type of face, of which I have found examples among the Kekchi Indians showing an almost perfect resemblance. From the diversity of headdress, ornament, and clothing we are justified in supposing that the characters represented filled different offices. It is probable that the Indian advancing from the right held the office of high priest, the one opposite him that of chilan, "soothsayer", and that the other four were the Chacs, who were chosen by the priests and people in the month Pop from among the old men of rank to assist at sacrifices and religious ceremonies (see Landa, Relacion, pages 146, 160, and 166).

The kneeling figure, which I have designated by *e*, holds a staff, which is either the token of his rank, like the short thick staff that the stewards of the caciques of Mayapan used to carry (see Landa, page 40), or was used to ignite fires, as in the pictures of the codices. On his arms and legs appears, painted or tattooed, the design of the woven mat, which I call the pop character, and to which I shall recur later. His right hand is held over the left shoulder so that it is not visible, though it seems to hold a white flower. He has no head covering or ornament. The wrinkles on his face and his black-rimmed eyes characterize him as an old man. His mien is rather that of fear than of calm submission to his fate, such as Indians usually show.

The chief priest, *f*, advancing from the right, is painted black and has in his outstretched right hand a gala lance, with a flint point and rattles, the shaft of which reaches to the ground. In his left hand he holds a painted fanlike object, which I recognize as the soplador woven of palm leaves, used in every household in this country to kindle the fire, and which I do not think was ever used for fanning, a custom unknown among the Indians. A jaguar skin with head and forepaws hangs from his shoulders and seems to be fastened to a white article of attire on the breast, something like a shirt front. The under side of the animal skin is visible below the left arm and has a jagged edge produced in drying, the fresh skin being stretched on the ground with wooden pegs. A black stick protrudes from his neck, which I can not explain. Wrists and ankles are swathed in colored fabrics, also the left leg above the knee. The ex appears between the feet. The face is covered by a long beard, and there is a white rim about the mouth, such as we find in the black male monkey (batz, in Maya), and it is therefore probable that he wears a monkey mask, like the priest in the Dresden codex, pages 25 to 28, who appears with an animal mask at the ceremony of the new year.

To the left of the kneeling figure stands the figure *d*, painted black, holding in its right hand a two-lashed scourge, while the left is raised appeasingly. The orbit of the eye, the ear, and the lower part of the face are painted yellow. A checkered, pointed cap, such as the chief priests usually wore, is bound on the back of his head. An ex of elaborate design hangs down before and behind. The black painting of figures *f* and *d* may possibly have some connection with the thirteen days' fast which is observed at the end of the year, during which it was the custom of the Mayas to paint their bodies with lampblack (see Landa, pages 278 and 280), or the persons represented may be the priests of black gods.

The short but corpulent figure *c* that follows holds a soplador in his right hand. The face is distinguished by an aquiline nose and drooping lower lip and the black ring about the eye already noted in figure *e*, which I had also noticed in a statue at Copan. The head is bound with a strip of jaguar skin, from which the hair protrudes in rays. Below the ear and on the necklace hangs a round, black ball, which also appears on the shoulder of figure *d*, and looks almost like a blot, but undoubtedly has a meaning.

Figure *b* has the same sort of staff in his hand as the kneeling figure. The face is dark-colored, and the headdress similar to that just described, save that the hair is worn in tufts. On the breast, attached to a neck chain, rests a shield bearing the pop character, with an edge of sharp points. One end of the chain seems to be held by the man behind, as if he were holding him fast by it, an idea which is probably not conveyed intentionally.

Figure *a* is marked by a huge headdress resembling a beehive, from which two feather fans project sidewise. The long, straight hair hangs down from the back of the head. The left hand grasps a bone partly painted red, and the right hand carries a soplador. The wrists and ankles are swathed. A white shield lies on the breast. Figure *g*, standing in the right-hand corner, in many points resembles the one just described. He also holds a bone in his left hand, which is variously applied as head ornament and ear peg. In his right hand, which is thrown over the shoulder, he grasps a three-lashed scourge, and under his arm is a soplador. Bright-colored fabrics are bound around his ankles and above the knee. The headband is narrow and yellow, and the eye is surrounded by a black ring with rays.

There is a monstrous wart on the nose, which was probably considered beautiful, for we note the same excresences in figures *b* and *e*, and *a* has even bristles on his nose and forehead.

The pop sign, already observed twice, occurs on the sculptures of Copan and Yucatan and on the wooden tablets of Tikal. I have also found it on a fragment of pottery at Canasec, near Coban. It appears in Copan very frequently and in various forms, as a breastplate, on the sides of the idols, and even as the basis of the glyphs on a stela, to be read in the order of succession as the plaiting runs; but it is not to be found in the codices, from which we may infer that it refers to men of distinction, but not to priests or gods. It appears in the codices as a mat (*a*, figure 130), which in all languages of the Maya group is called pop, for which reason I call it the pop sign. Now the title of a prince was Ahpop, the secular head of the Kiches was called Ahau-ahpop, and that of the Cakchikels Ahpop-Zotzil (see Ximenes, page 36; Titulo de los Señores de Totonicapan, page 128; The Annals of the Cakchikels, page 36). I therefore conjecture that figures *b* and *e*, plate XLVIII, were secular princes, Ahpops.

We may further expect to find the plaited pattern in the glyph of the month Pop, which is the case in certain passages of the codices, the wooden tablets of Tikal, and the Palenque tablets *b*, *c*, and *d*, figure 130, where, as in Landa's reproduction of it, *e*, the character for "yellow" occurs, consisting of five small rings in a circle, so that the glyph signifies "yellow plaiting", which is synonymous with bast mat, or pop. In some cases the center ring is missing, which may often be explained by lack of space or indistinctness, but in other cases it is intentional and perhaps stands with certain secondary signs for the rank of Ahpop.

In the picture there are 23 glyphs, of which those between *a* and *g*, plate XLVIII, and those in front of *e* seem to refer to the action, and the rest chiefly to the persons participating in it. For greater clearness I will number them as follows: Those behind *a*, plate XLVIII, in their order as 1, 2, 3; before *b*, 4, 5, 6 (number 6 is Imix); before *c*, 7, 8, 9; before *d*, 10, 11; before *f*, 12, 13, 14, 15 (12 is the jaguar's head); behind *f*, 16, 17, 18, 19; and before *e*, 20, 21, 22, 23 (the last is the sign for the year). Glyphs 1 and 10 are the same, except that the latter has an affix, which I translate by aj, as I take 1 for the sign of the month Pop and 10 for the Ahpop rank (see the sign of the month Pop in the Dresden codex, *f*, figure 130). Glyph 2 signifies a period of time, which is greater than 20 years of 360 days each, because it appears twice in the Palenque relief in a place where a period of time and a date are given and in both cases the sign for 20 years of 360 days each, determined by Professor Förstemann, stands next as indicating less value (Zeitschrift für Ethnologie, 1891, page 150, and here *g*, *h*, and *i*, figure 130).

Sign 3 is the glyph for yellow (kan). Sign 4 occurs with prefixes as sign 17 and 21; the prefix of 17 signifies black, and as it belongs to *f*, plate XLVIII, which I regard as the black high priest, sign 4 might read "priests", which would harmonize with the fact that figures *b* and *e* carry the staff used by priests to ignite the fire.

If we compare sign 12 with the headpiece of jaguar skin, the relation is certainly striking. Here I would recall the fact that the same glyph occurs on the urn described in the Verhandlungen der Berliner Gesellschaft für Anthropologie, 1893, page 550, which we now recognize as the glyph of the day Ix, more correctly written Hix ("jaguar"). Signs 15 and 18 are the glyph of the lightning beast, mapatch, in Indian aj-ou, which was represented by Landa as the letter "o", and erroneously assumed by Brasseur to be the letter "p". The same glyph appears in the codices as the month Xul, and since xul in the Kekchi tongue has retained its original significance, which is "animal", the month is, therefore, the animal month (*k*, *l*, and *m*, figure 130). The double "ik" as an affix of sign 15 recalls Landa's reproduction of the month Pop, *e*. Sign 16 seems to be the picture of a dead bearded monkey's head, which reminds me that figure *f* apparently wears a monkey mask. Sign 20 is the glyph of the god designated by Doctor Schellhas as F, the companion of the death god (Verhandlungen der Berliner Gesellschaft für Anthropologie, 1892, page 112). Sign 21 occurs in the Dresden and Troano codices in connection with fire-kindling; it also appears on the Palenque relief, *n* (figure 130). Sign 23 is the sign for the year with the numeral 5, and it occurs similarly in the Dresden codex, *o*. Doctor Seler considers it equivalent to the glyph of god N, *p*.

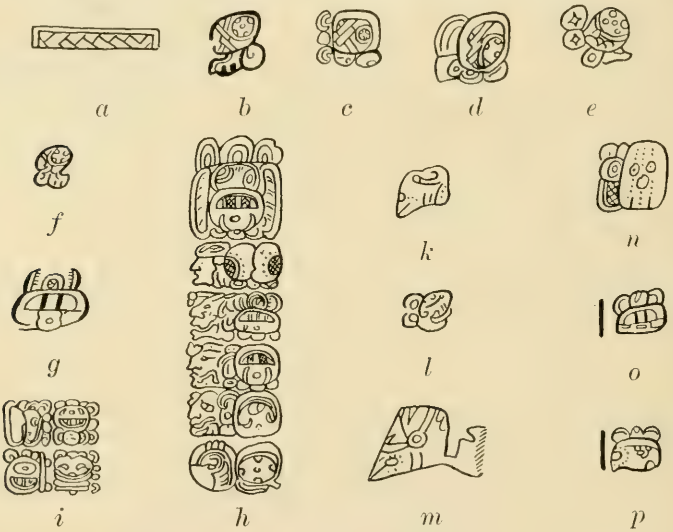

FIG. 130. Glyphs from Maya codices and inscriptions.

Much in the preceding picture and in the glyphs is still unexplained, and much may have been erroneously interpreted by me. It is therefore desirable that further investigations should be instituted by others. I believe that the ceremony represented is connected either with the beginning of a Kan year or of a new katun. On the latter occasion (consult Brasseur, Landa, and Pio Perez) it was always the custom to offer a human sacrifice and to kindle a new fire.

REMARKS BY DOCTOR SCHELLHAS[a]

The discoveries of Mr E. P. Dieseldorff show in the forms of the pictorial representations and of the glyphic characters the greatest resemblance to the antiquities of Palenque. They evidently belong to a common cultural region and cultural group; to the same group, indeed, to which the Maya manuscripts, and especially the Dresden and Peresian codices, belong. On the other hand, they show the same deviations from the antiquities of Yucatan proper as do the manuscripts and the antiquities of Palenque and also those of Copan. Aztec accordances and influences, such as exist in northern Yucatan, seem to be wanting. Mr Dieseldorff's discoveries (especially the present one and the one published in the Verhandlungen der Berliner Gesellschaft für Anthropologie, 1893, page 547 and following) confirm the theory already set forth by me in Internationales Archiv für Ethnographie, volume 3, 1890, at the end of the paper entitled "Vergleichende Studien aus dem Felde der Maya Alterthümer", that the Maya manuscripts originated in a region to the south of the peninsula of Yucatan and that we must seek in that region, that is, in the interior of Chiapas and Guatemala, for the primal seat and origin of the ancient civilization of Central America, whose more highly artistic and more realistic forms appear in Yucatan proper to be already blended with and influenced by the more rigid, conventional types of Mexican art and mode of representation.

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[a] Same place as the preceding paper.

THE VASE OF CHAMA[a]

By E. Förstemann

My friend, Mr Dieseldorff, of Coban, Guatemala, has rendered a most acceptable service to Maya investigation by the discovery and first discussion of this remarkable vessel (Verhandlungen, volume 16, pages 372 to 377 and plate VIII). As he is desirous that it should be further investigated by others, I will not withhold my opinion, although I am well aware I can add but little and must still leave much in obscurity.

For the better comprehension of Mr Dieseldorff's drawing, I will first set down the 23 glyphs belonging to the picture in the order in which they occur on the plate (plate XLVIII). They are arranged in seven groups, as follows:

1	4, 6	7	10	12, 13	16
2	5	8	11	14	17
3		9		15	18
				20	19
				21, 23	
				22	

My first remark refers to a certain resemblance between this picture and the lower half of page 60 of the Dresden codex. There we see on the left a personage, spear in hand, enthroned on a serpent, which lies upon the neck of a second personage, whose eyes are bandaged. A third personage in warlike dress, armed with a spear, leads a fourth toward this group from the right; this fourth figure is cowering on the ground, with arms bound and eyes rimmed with black. These four are all gods, and I have already expressed my ideas regarding this picture elsewhere.

The vase of Chama, on the contrary, for once presents nothing supernatural, but more agreeably, if I may say so, a scene of purely human interest. The picture here clearly refers to the great feast celebrated by the Mayas, as well as by the Aztecs, every 8 years, that wonderful solar and Venus period of 2,920 days, which I last discussed in my article "Zur Entzifferung der Mayahandschriften,

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[a] Das Gefäss von Chamá, Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte, pp. 573 and following, published in Zeitschrift für Ethnologie, 1894, pt. 6.

IV ". Glyphs 1 to 3 and 23, the initial ones and the last, point to this period of time, unless we are wholly mistaken. Mr Dieseldorff regards sign 1 as that of the first 20-day period of the year, Pop, and I have no other suggestion to offer, although we have here only a part of Pop. In regard to sign 2, I differ with Mr Dieseldorff, who is reminded of the designation of a period of time on a relief at Palenque. But the period referred to there embraces a huna, that is, 400 years, and this seems to me entirely irrelevant here. It seems rather to suggest a variant of the sign of the south, that is, the Cauac years. But the sign of the south is something resembling a pair of scales, doubtless referring to the rising and setting of the sun, and below this, the sign yax ("power", "strength") as symbolic of the power of the southern sun. In this case I believe I find the sign yax duplicated, the scales being merely indicated for lack of space. Mr Dieseldorff regards sign 3 as that representing yellow color, but it is the symbol of the east and the Kan years. According to this 1 to 3 would read "the month Pop midway between the Cauac and the Kan years". It might, therefore, be regarded as a method of dating.

The concluding sign, 23, offers no difficulty at all. It consists of the glyph for year combined with the number 8 and a prefix, which possibly gives that glyph the value of 365 days, while by itself it denotes only 360 days.

Moreover, I believe that this picture does not represent this feast in general, but a particular feast of this nature, and that it may not be impossible in the future to determine the time of this feast exactly. The festival consisted, after previous fasting and scourging, principally in the kindling of new fire, in feasting, and in human sacrifice.

Fasting, as Mr Dieseldorff also thinks, is probably indicated by the painting black of the personages *d* and *f*, possibly also by the black-rimmed eyes of *c*, *e*, and *g*. Whether the scourges carried by *d* and *g* relate to this chastisement (it seems very much as if *g* were engaged in the very act) I leave uncertain.

The kindling of fresh fire, which plays so important a part in the Perez calendar given by Stephens, is indicated by the implement held by *a*, *c*, *f*, and *g*, which Mr Dieseldorff distinctly recognizes as the soplador, or fire kindler, still in use. The personage *b* seems to be the actual kindler of the fire, since he holds the wooden fire drill in his hand; in the Perez calendar the fire-kindler is a special official. It is with *b* that we find sign 4, so often met with, which plays so great a part and is apparently connected with fire, for instance, in the Dresden codex, pages 4c to 5c; perhaps it even designates the rising flame. This glyph appears twice more in our picture; first, as sign 17, where it has a prefix, apparently that of the north, and, secondly, as sign 21, where it also has a prefix, which apparently occurs three times in the

Dresden codex, pages 5b to 6b, in direct connection with the kindling of fire.

The banquets are very realistically indicated by the bones, which the two personages, *a* and *g*, doubtless the lowest in rank among the seven, hold in their hands. Therefore it would seem that the glyphs ought also to refer to food, which reminds us that the sign Imix (6 and 14 here, both provided with the same secondary sign) has the added sense of maize. Indeed, I would make the suggestion, though I may be in error, that glyphs 8 and 22, which are wholly unfamiliar to me, may perhaps denote some local form of baked food.

We now come to the human sacrifice, the performance of which we do not see here, as in certain passages of the manuscripts, but only the preparation. I imagine the purport of the scene to be as follows: A warrior of high rank has captured a wounded enemy, who, against the will of the actual victor, is claimed by the priest as a sacrifice. Let us now consider the separate actors in this scene.

The prisoner, *e*, of course, is the central point. We see him sunk down upon the ground. In his hand is a staff, which I can by no means regard as a fire drill, but either as a badge of rank or as a broken spear. It is evident to me that he is wounded from the arrow point piercing the lower jaw and the agonized motion toward it of the right hand. Behind the neck we see a flower. This may possibly express the prisoner's name, but I will not withhold another observation regarding it. Two words are common to all the Maya dialects, one of which is written quix, chix, chiix, and the like, the other quic, chich, chic, etc. The former seems to signify a plant, the dictionaries usually giving the meaning of thorn; but the second word invariably signifies blood. Does the flower, possibly that of a thorn bush, refer to the wound?

Before the prisoner, at the right, stands the warrior, *f*, who claims him as his property; for that he is a warrior and not a priest is indicated by the lance (the tip of which seems to be stained with blood, as in the Troano codex, pages 5b to 4b) and by the jaguar skin thrown about him. Before his face are the four characters 12 to 15, which seem to have reference to him. I regard 12 as the sign of his rank, which is further emphasized by sign 13, the well-known ahua ("lord"). 14 is, like 6, imix; I am uncertain as to what it signifies here. Nor do I venture to decide regarding 15, although the sign above it is clearly the ben-ik sign, so frequently found in the manuscripts and inscriptions, to which, until a better meaning appears, I attach that of the lunar month of 28 days; unfortunately the principal sign beneath it is indistinctly drawn. What the staff protruding from this person's neck signifies I am unable to say, as is Mr Dieseldorff. If it is a spear thrower (Aztec, atlatl), then it is indistinctly represented.

Behind *f* stands *g*, doubtless a person of lower rank, belaboring himself with his scourge and rejoicing in his bone. I can not explain the four glyphs 16 to 19 before his face; 16, with the closed eye, generally indicated death or the death god; 17 seems to be composed of the signs for the north (the region of death) and for flame. I venture no conjecture concerning 18 and 19. Can this whole group be an allusion to human sacrifice?

We now come to the four personages to the left of the prisoner. The black one, *d*, recognizable as chief priest by his headdress, seems to lay claim to the prisoner. I venture no suggestion as to the two signs 10 and 11, apparently belonging to him; perhaps the first, as Mr Dieseldorff thinks, refers directly to the priest.

Next comes the interesting personage *c*, a short, stout gentleman, whose face is not in the least conventional, but, on the contrary, very individual, which suggests the idea that the artist in this case, as possibly also in that of the other personages represented, had certain individuals in mind. His jaguar-skin cap and perhaps the black balls hanging below his ear and over his breast indicate his high rank, and sign 9 (ahau, "lord"), close before his forehead, confirms this. If signs 7 and 8, as I suggested, refer to the feast, then the former indicates the presiding officer, for which his corpulence well befits him. This personage seems to me to have something humorous about him.

c is accompanied by the fire-kindler, *b*, who seems to give his opinion in regard to the quarrel between priest and warrior with the look of an experienced official. Of the three glyphs alloted to him, 4 to 6, the last at any rate gives his rank, while I have tried to attribute to 4 the kindling of the fire and to 5 the banquet.

There still remains, on the extreme left, a subordinate figure, *a*, who was not deemed worthy of a glyph, and who has an extremely stupid face and an open mouth. His livery, confined wholly to his head, must have seemed comical even to the Mayas themselves.

I suppose that this discovery is the more valuable because we possess hardly any representations pertaining to actual human life from the Mayas, except perhaps in some parts of Codex Troano-Cortesianus.

THE VASE OF CHAMA[a]

By Eduard Seler

The beautiful vase of which Mr Dieseldorff was unfortunately not able to send the society more than a drawing, which is reproduced in plate VIII of the volume for 1894, was discussed in the last number of the same volume by Mr E. Förstemann. To my mind it is not safe to attempt special interpretations of complex representations of this kind in which glyphs also play a part, when only a drawing and not, at the very least, a photographic reproduction serves as a guide; for we know how even the master hand of a Catherwood and of the artist whom Lord Kingsborough employed failed in the reproduction of these intricate figures and symbols. I would, therefore, have avoided any expression of my opinion as to the meaning of these representations had I not observed that an incidental identification mentioned by Mr Dieseldorff in his description of the picture, and which is certainly incorrect, has been used by Mr Förstemann as the principal argument to prove a certain point.

Mr Dieseldorff[b] says: "The chief priest, *f*, advancing from the right, is painted black . . . ; in his left hand he holds a painted fan-like object, which I recognize as the soplador, woven of palm leaves, used in every household in this country to kindle the fire, and which I do not think was ever used for fanning, a custom unknown among the Indians". And similarly, in discussing the other figures, he speaks of this implement as a "soplador". But Mr Förstemann concludes:[c] "The implement held by persons, *a*, *c*, *f*, and *g* points to the kindling of the new fire, and is most distinctly recognized by Mr Dieseldorff as the soplador, or fire kindler, still in use" (see plate XLVIII).

It is certainly true that fans woven of strips of palm leaf are used in Guatemala, as in many parts of tropical America, to kindle and keep up the fire. Dieseldorff's statement that the Indians of the present day in Guatemala do not use a fan for fanning themselves is also doubtless true. Neither to my knowledge are fans used among the Mexican Indians of to-day, at least not as a general custom, but among the ancient Mexicans the fan was an article in general use. We know this from the language; we learn it from the texts and from history, and we see it in the illustrations of the Mendoza codex. And it was not otherwise with the Maya races, for the word exists in the Maya language proper as well as in the languages of Guatemala.[a] If we find no fans represented in the few Maya manuscripts which we possess, it is simply because they treat only of religious and calendric matters, just as we also look in vain for fans in Mexican picture writing of the same kind. But we find pictures of them in the Mendoza codex, the only manuscript which treats of everyday civil and political life, and they occur in Mixtec picture writings, which appear principally to relate to legends of the immigrations of ancestors, human or divine. It strikes me as simply inconceivable that the fire fan should have been used in the ceremony of procuring fire by friction or that it should have been placed in the hands of the figures portrayed merely to convey to the beholder the idea of the ceremony of fire-making. In the many representations of fire drilling with which I am familiar in Mexican picture manuscripts, and there can not be far from a hundred of them, the fan is not used for this purpose in a single instance. The use of a fire fan is depicted by old de Lery as familiar to the Tupinambas of Brazil, and he describes it as follows: "At night he orders the fire betimes to be blown to a flame with a kind of small bellows, called tatapecona, not unlike the screen which our women hold before their faces when they stand by the fire ". But when he describes the fire drill he does not mention " a small bellows ". He says: " Such rapid and vigorous rubbing produces not only smoke, but also fire. Then they put on cotton or dry leaves, instead of our tinder, and the fire kindles very easily ".

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[a] Das Gefäss von Chamá, Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie, and Urgeschichte, 1895, pp. 307 to 320, published in Zeitschrift für Ethnologie, 1895, pts. 3–4.

[b] Verhandlungen, v. 26, 1894, p. 374.

[c] Verhandlungen, v. 26, 1894, p. 574.

Two kinds of fans were in use among the ancient Mexicans. Those of one kind, made of feathers, were costly. They were used at festivals and served as tokens of high rank, inasmuch as kings and noble warriors were entitled to wear those made of the precious green tail feathers of the quetzal bird,[b] the great merchants being allowed only to use those made of the feathers of the grouse[c] of the tierra caliente. Fans of the other kind were simpler and were used in traveling. Hence they are the symbol for a traveler or for a king's messenger. I reproduce here a picture from the Mendoza codex, page 69 (figure 131), which represents the old and tried warriors who had received the title Tequiua from the king and had the right conferred on them to go as his ambassadors (embaxadores) and to serve as leaders and pathfinders in war (adalides en las guerras). They are represented "with their great lances and fans" (con sus lanzones y ventallos), as the translation says, and with their bodies painted black, corresponding to their rank, and because they are bound on an official mission. In *a*, figure 132, I give a pair of messengers of lower rank (mandones—executores y embajadores del

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[a] Ual, " abanico, aventador, mosqueador " (Perez, Diccionario de la Lengua Maya). Val, " aventador de pluma, ó de palma " (Brasseur, Vocabulaire de la langue Quichée). Vual, " Fächer " (in the Pokomam tongue, according to Berendt). On the other hand, hopob-kak or hopzah kak, " soplador del fuego " (Perez).

[b] Usaban traer los Señores unos mosqueadores en la mano que llamaban quetzal ecaceuaztli, y con unas bandas de oro que subian con las plumas (Sahagun, v. 8, cap. 9).

[c] Cuando lleguemos á nuestra tierra sera tiempo de usar los barbotes de ambar, y las orejeras que se llaman quetzalcoyolnacochtli y nuestros báculos negros que se llaman xauactopilli y los aventadores y ojeadores de moscas (coxoli yehcaceuaztli), las mantas ricas que hemos de traer y los maxtles preciados (Sahagun, v. 9, cap. 2).

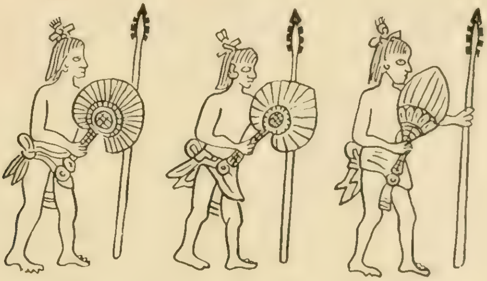
Fig. 131. Warriors with fans, from the Mendoza codex.

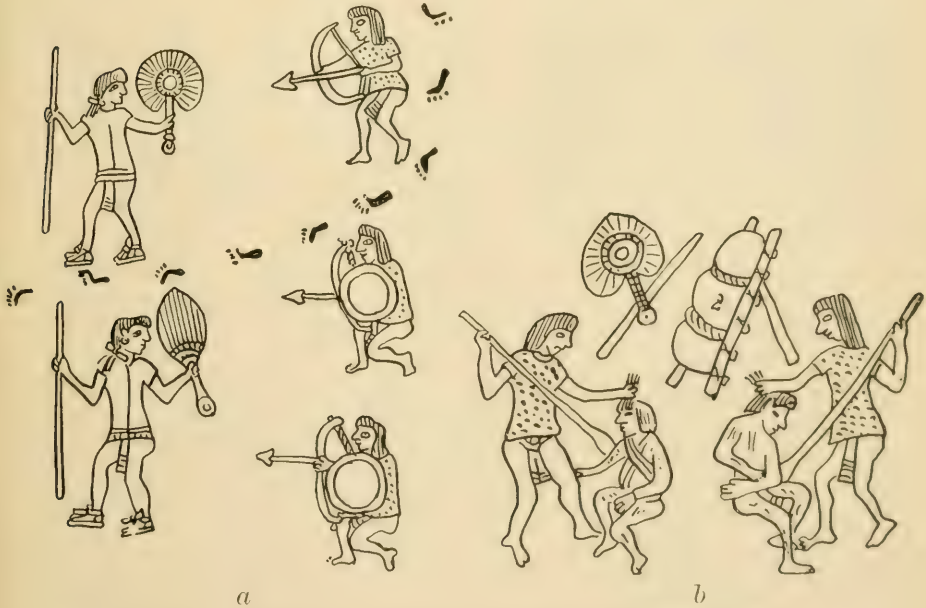

Fig. 132. Messengers and traders attacked, from the Mendoza codex.

Señorio de Mexico), from the Mendoza codex, page 67, who have carried a declaration of war to the cacique of a village and are fleeing from the now hostile region, pursued by archers. In *b*, same figure, also from the Mendoza codex, page 67, we have the event which occasioned the challenge—the surprise and murder of Mexican traders by natives of the village in question. Here, too, besides the carrying frame with the bale of wares and the traveling staff, we have the fan as a necessary article to be carried on a journey as a matter of course. To these three pictures from the Mendoza codex I add still another example (*a*, figure 133), taken from the Mixtec Colombino (Dorenberg) codex, illustrating a subject of a more mythologic nature. Here, too, is an undoubted representation of travelers, who therefore hold in their right hand what may be a lance or merely a traveling staff and in their left hand carry a fan. But the foremost of these persons is the most famous of the Mexican gods, Quetzalcoatl, the wind god and the hero of the myths of the wandering Toltecs.

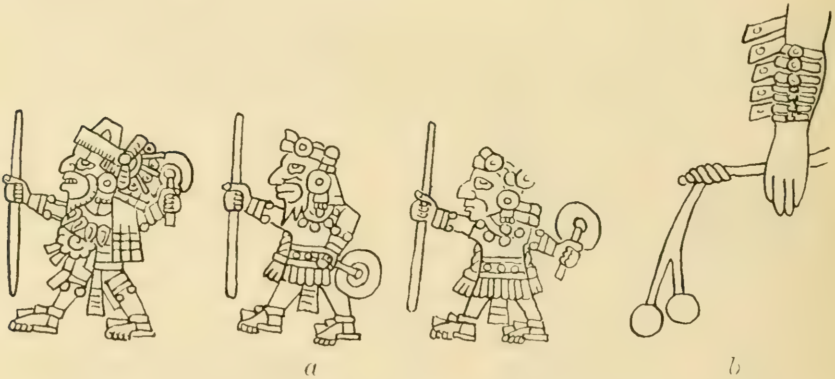

FIG. 133. Travelers and whip, from the Mixtec-Columbino codex and the Chama vase.

The application of these pictures to the scene represented on the Chama vase is self-evident. Whoever examines the attitude and bearing of the separate personages impartially will scarcely form the idea that one of the chief priests advancing from the right "seems to demand the death of the kneeling victim with bloodthirsty vehemence, while the one opposite is evidently trying to pacify him". It is scarcely probable that such matters were ever discussed. If a sacrifice was deemed necessary or useful, and a fit subject was at hand, the sacrifice was performed. The scene assuredly has an entirely different meaning from the one ascribed to it, and I think I can explain it in two words: arrival and reception.

Now for the kneeling figure. Mr Dieseldorff thinks it is an elderly

Indian intended for sacrifice, and Mr Förstemann refers us to page 60 of the Dresden manuscript, where we see a captive kneeling at the feet of a warrior armed with shield and spear and adorned with a great feather crown.

Whoever is willing to conclude that the person in question (*c*, according to Dieseldorff's designation) is an Indian intended for sacrifice, merely because he is represented kneeling, may do so. But I do not believe that he will succeed in finding anything to support his theory in any pictorial representation of a Maya manuscript or Mexican picture writing. To me it seems indubitable that this figure (see plate XLVIII) is not meant to represent a prisoner. In their pictorial representations these ancient peoples were wont to speak a language which can not so easily be misunderstood. The prisoner was dragged to the spot by the hair of his head. That is the usual mode of representation in Mexican picture writing and on Mexican reliefs. That was the actual procedure in the worship of the Mexicans when a prisoner was offered as a sacrifice. Or else the prisoner is represented as a captive, with arms bound behind his back, or carried in a bag like a trophy of the chase. It is thus in the Maya manuscripts. Mr Förstemann goes still more into detail in describing his picture. He believes he recognizes in the object which the person *c* has in his hand either a badge of office or a broken spear. He sees an arrow head sticking in the lower jaw, and the right hand seems to him to be raised in agony toward the wound. And, lastly, he is inclined to consider the flower visible at the back of the neck as a symbol for blood, the result of an association of ideas produced by the similarity of sound between quix ("thorn"), and quic ("blood"). Precisely what Mr Förstemann takes for the arrow head piercing the lower jaw, whether it is the two last hairs of the beard, or the black marking, which seems to be below the upper lip, or perhaps the two ear pegs, I frankly confess I do not know. As for the gesture of the right hand, which is moreover exactly the same as that of the last personage, the companion of the advancing chieftain, it has quite a different and a very definite meaning. It was the customary salute among the pagan Mayas, or rather a sign of humility and submission, the sign of peaceful intent.[a]

The gesture is perfectly comprehensible. The hand in which the enemy holds his weapon, the hand with which he deals a blow, is turned backward, away from the one who is to be peacefully saluted. The weapon which is held in the right hand was probably laid aside for the moment.[a] In this picture the figure *g*, the companion of the visitor, has tucked the fan, which he originally held in his right hand, under his left arm in a rather comical manner, in order to perform the salute. The reason why but two of the seven figures in our picture perform the salute is that this gesture is here made only by the followers of the chief personages. These chief personages are, on the one side, the strange chieftain just arriving; on the other side, the four princes of the tribe visited, who, if they were of the Kiche tribe, for instance, would bear the titles Ahpop, Ahpop Camha, Ahau Kalel, and Ahtzic Vinak. The kneeling person, therefore, marked for sacrifice by Mr Dieseldorff, regarded by Mr Förstemann as a wounded, bleeding captive claimed as a victim by the priest against the will of the real victor, I consider simply as the attendant, the servant, the follower—the slave, if you will—of the four princes who are receiving the strange chieftain into their territory. It is possible that he is represented kneeling merely for the sake of economizing space, since the attitude of a person advancing in rapid action left a gap not otherwise to be filled. Moreover, a greater degree of submissiveness is justifiable or at any rate courteous on the part of those receiving a guest.

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[a] See Cogolludo, v. 9, cap. 8, and Villagutierre y Sotomayor, v. 2, cap. 2: Luego que llegaron, saludaron los dos capitanes (Itzaex), á los dos Religiosos, á su usança (que es, echar el braço derecho sobre el ombro, en señal de paz y amistad), that is they saluted the two monks after their fashion, by raising the right arm upward toward the shoulder, as a sign of peace and friendship.

Mr Förstemann is quite correct in assuming, contrary to Mr Dieseldorff's view, that the personage advancing from the right can only be a warrior. I would like to be more explicit and assert that he is a warrior chief. The common soldier among the Mexicans carried the maquauitl, the wooden sword with an edge of obsidian splinters. The chieftains, as figure 131 and other pictures in the Mendoza codex show, carried long pikes, which had at the point a bladelike expansion armed with obsidian splinters. The common soldier among the Mayas was armed with bow and arrows and the chief carried a long pike. In the passage which I cited in confirmation of the gesture of salutation these pikes which were carried by the Maya chiefs are exactly described. I will quote the description here, because it puts into words precisely what we see in the Chama picture. The reference is to the two leaders whom Canek, the chieftain of the Itzas, sent to Tipu in 1618 to meet the two Franciscan monks, Bartholomew de Fuensalida and Juan de Orbita: "They carried pikes with blades of flint, quite after the manner of ours, only that ours have blades of steel, and they have at the base of the blade many feathers of bright and beautiful colors, just as our ensigns have tassels wound about at the head. The blades are about one-fourth of an ell long, two-edged, and with points as sharp as a dagger point. The other Itzas carried bows and arrows, without which they never venture out of their town ".

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[a] In the same way the North American Indians hold out the right hand, palm upward, or raise both hands empty, in sign of peace and friendship, while the Natchez, who met La Salle's column in 1682, expressed the same idea by clasping their hands together. See Garrick Mallery in First Annual Report, Bureau of Ethnology, pp. 530 and 531.

With the view I hold in regard to the kneeling figure in our picture, *e*, I can not, of course, suppose the object which this person holds in his left hand and seems to be presenting to be a part of a fire drill. Owing to the indistinctness of the drawing I can not say what it really represents.

On the other hand, I can only regard as a misapprehension the statement of Messrs Dieseldorff and Förstemann that the companion of the advancing chief (*g*, plate XLVIII) has a scourge in his hand. The whip is familiar to us, peoples of the Old World, as an instrument for inflicting pain, because we have saddle and draft horses which are driven with the whip. But among the ancient Central Americans, who were unfamiliar with the use of animals for such purposes, there was, ordinarily, no reason for the invention of such an instrument. The only instance I know of a whip in Mexico and Central America (*b*, figure 133) is, in fact, contained in a picture in which an animal is being led. It is one of the interesting clay reliefs from Chiapas, preserved in the Museo Nacional of Mexico, which shows the sacred tapir led by two richly clad priests.[a] But this is the only instance of which I know. I have never thus far found a scourge in the long list of instruments used by the Mexicans and Central Americans to inflict torture upon themselves or others, and these lists are recorded with pedantic exactness in various passages of the picture writings.

What Messrs Dieseldorff and Förstemann regard as a whip brandished in the hand of *g*, plate XLVIII, in the Chama picture, is, if the drawing is indeed correct, nothing more than a necklace, somewhat displaced by the energetic motion of the right hand, and consisting of a large, four-cornered prismatic or cylindric stone bead, strung on a twisted cord. We know from actual specimens in our collections that such long cylindric or prismatic beads were worn, and this is shown, for instance, by various clay figures and fragments in Doctor Sapper's collection. Whoever compares this supposed whip of *g* with the cord on which a ring, apparently cut from a mussel shell, is hung about the neck of *b* must be convinced, it seems to me, of the correctness of my view.

I need hardly dwell upon the fact that I am equally unwilling to regard the object held in the hand of *d* as a scourge. This black-painted figure is apparently the spokesman of the group represented on the left side of the picture. The uplifted hand shows that he is uttering the speech of welcome. But I can not say what the object may be which he holds in his right hand, whether it is a badge of office, or what it is.

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[a] These clay tiles are reproduced in the splendid souvenir publication issued by the Junta Columbina in Mexico three years ago for the celebration of the four hundredth anniversary of the discovery of America.

I now come to the bones which both *a* and *g* hold in the left hand. Förstemann's theory that by means of them "the banquets are very realistically indicated" is anything but convincing, and I really think it must be characterized as grotesque. For even the other glyphs to which Mr Förstemann refers are of undetermined meaning. I think that there can be no question here of anything but an implement or a cognizance. In the picture writings and the collections we chiefly find three kinds of implements made of bone. Bones pointed at one end were used as daggers (punches, awls) and as instruments of castigation. Bones with parallel incisions on the surface could be used as rattles (Mexican omichicauaztli) by passing over them the prong of a deer's horn or a snail shell. Flutes were also made of long bones, as in ancient Peru and among the Guiana Caribs. Such bone flutes were dug up, for instance, at Progreso, near Merida, Yucatan, with ancient clay vessels and skeletons with malformed skulls.[a] The bone held by *a* and *g* can not have been used as a dagger on account of its form. We may assume that it was a musical instrument, a flute, or a rattle.

As for the persons represented, the most striking thing about them is that all, with the single exception of *g*, farthest to the right, have more or less marked indications of a beard. We know that Indians in general have a very slight growth of beard, and among many, indeed among most, tribes the law of beauty demanded that the face and body should be kept as smooth as possible. Tweezers play an important part among the antiquities and in modern ethnography everywhere in America. Of the Mayas of Yucatan in particular the chronicler relates that they had no beards and that children even were subjected to a prescribed treatment to prevent the growth of beards.[b] The arriving chieftain, *f*, has a beard of singularly striking form. Mr Dieseldorff recognizes it as the form of beard which occurs in the males of a species of monkey known to the Indians as batz, and therefore suggests that the figure in question wears a monkey mask. I will not deny that the shape of this beard may stand in distinct specific relation to the beard of a monkey, but I can not admit that *f* wears a monkey mask. The face of the monkey has certain distinctly characteristic features, which are usually faithfully grasped and reproduced by Indian artists; but these are wholly wanting here.

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[a] Anales del Museo Nacional de Mexico, v. 3, p. 278.

[b] "No criavan barbas, y decian que les quemavan los rostros sus madres con paños calientes, siendo niños, porque no les creciesen" (Landa).

The sun god is represented in Maya manuscripts as bearded, and so, frequently, in Mexican picture writings, is the god Quetzalcoatl, who, although usually called the wind god, can not deny kinship with the sun god of the Maya tribes.

The Mayas styled the sunbeams u mex kin ("beard of the sun").[a] I give in *a*, figure 134, two pictures of Quetzalcoatl, and below them four pictures of the sun god from the Dresden manuscript, which may safely be designated as Kinich Ahau. The beard surrounding the entire chin is unmistakable. The last two pictures particularly agree with *f*, plate XLVIII, of the Chama vase in the shape of the beard, indeed I might almost say in the features, especially in the shape of the nose, which in the drawings of the Dresden manuscript is usually stereotyped and characteristic for the individual gods. The personages at the left of the picture, on the other hand, have beards corresponding more nearly to the natural sparse growth of Indians. In this connection I will not omit to draw attention to the fact that among the antiquities from the Kekchi territory, the region about Coban, in the possession of the Royal Museum of Ethnology, there are various small clay masks and heads with plainly developed mustaches.

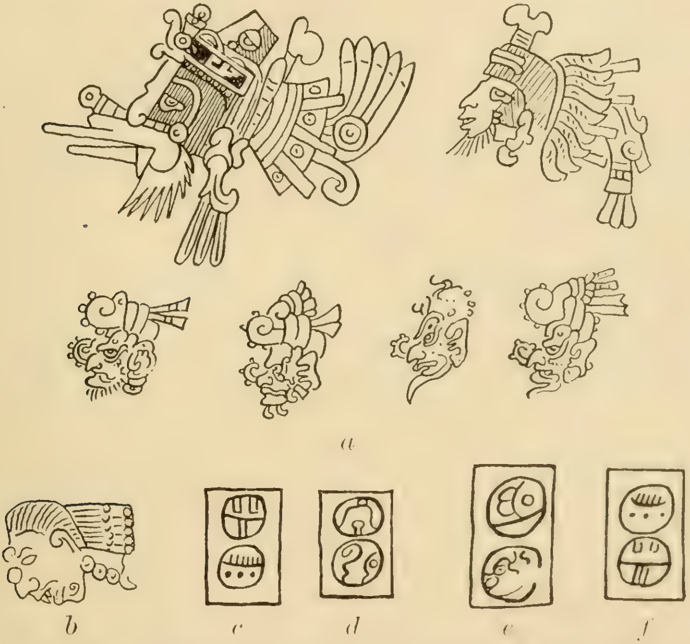

FIG. 134. Figures from codices showing beard, and glyphs from vase.

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[a] Mexkin rayos del sol (Perez's dictionary).

In one of the famous reliefs of Santa Lucia de Cozumalhuapa the sacrificial priest is seen in the center, and in the four corners his four assistants, who are variously costumed according to the cardinal points to which they belong, and are in part represented as skeletons. Each of the five personages bears in his arm, that is, in his hand, the head of a human being, and each of these heads has peculiar features, a peculiar style of wearing the hair, etc. Only the head held by the chief priest agrees in features and coiffure with that carried by the skeleton in the lower right-hand corner. Both heads have an aged, bearded face. Were not the distinguishing marks of old age clearly exhibited by both these heads, together with the beard, we should be justified in thinking that the four cut-off heads were meant to indicate the four tribes living at the four cardinal points, and that the tribe in the lower right-hand corner was distinguished by a growth of beard and was also the chief enemy of the builders of the monuments of Cozumalhuapa.

To return to our Chama picture, both Dieseldorff and Förstemann especially call attention to the knobby excrescences on the forehead and nose of several of the characters on the left hand. Both, without hesitation, declare them to be warts. I do not think such growths were deemed particularly beautiful by any tribe, much less that the ancient Indian artist would have felt obliged to make them thus prominent. I am rather inclined to believe that we here have to deal with a kind of decoration with inserted knobs, similar to those on the head in the lower left corner of the relief just described and especially evident on the nostrils and above the root of the nose of *b*, figure 134, which I have also taken from a relief of Cozumalhuapa.

I will not enter into the details of dress and ornament, but I will only add that thereby the chief dignitaries of a tribe are evidently characterized, of whom there were always four among the Kiches and other Guatemala tribes, distinguished by special titles. Mr Dieseldorff, in describing the black-painted figure (*d*, plate XLVIII), mentions that he wears bound on the back of the head " a pointed, checkered cap, such as chief priests usually wore ". I do not remember to have found this described anywhere as the dress of a " chief priest ", nor to have seen it anywhere. The object projecting from the back of the neck of the chief personage *f*, advancing from the right, which looks like a staff, I will not venture definitely to interpret. It may be connected in some way with the ear ornament or with the back bow of the neck ornament. The ear ornament is sometimes of monstrous size on the figures of Maya art, one of the deities in the Maya manuscripts having an entire bird as an ear peg.

The glyphs still remain to be discussed. Messrs Dieseldorff and Förstemann have numbered them as follows, according to their order in the picture:

1	4	6	7	10			12	13	16
2	5		8	11				14	17
3			9					15	18
									19
					20				
					21	23			
					22				

The last one, 23, is explained by Förstemann as a numeric expression. It does, indeed, contain the numeral 8 and the element which in the Dresden manuscript and upon the Copan stelæ denotes the period of 360 days, combined, it is true, with another element as yet unknown. Förstemann conjectures that the entire glyph is meant to indicate a period of 8 solar years.

Glyph 12 may have a similar special meaning. It may possibly, in so far as the indistinct drawing admits of any recognition, denote the uinal Xul. The other glyphs, the groups 1, 2, 3; 4, 5, 6; 7, 8, 9; 10, 11; 20, 21, 22; 13, 14, 15; 16, 17, 18, 19, would belong, respectively, to figures *a*, *b*, *c*, *d*, *e*, *f*, and *g*, beside which they stand. As to the significance of all these, only vague conjectures can be made. The special reference to food which Förstemann accepts for 6 and 14 is more than questionable. The reference to the fire drill which he conjectures for 4, 17, 21 may stand, without justifying the conclusions which he draws from the fact. From the entire order of arrangement I should conjecture that in each case the glyphs stated the title and name of the person in question; but, as we know nothing about either the one or the other, speculations concerning them are of little value. I am somewhat in sympathy with Dieseldorff's definition of 1 and 10 as Ah-pop. In that case we should have a curiously reduced form of Pop.

Should it be correct that 12 denotes the uinal Xul and 23 the period of 8 solar years, I might develop a theory which would accord very well with Förstemann's fundamental assumption, although, of course, the interpretation of the principal conception moves along wholly different lines. From the sixteenth day of uinal Xul to the first day of uinal Yaxkin, inclusive, the departure of Cukulcan was celebrated at Mani in Yucatan, and it was believed that during those days Cukulcan descended from heaven to receive gifts and homage in person. Now, Cukulcan is Quetzalcoatl, and Quetzalcoatl is identified with Venus, and in *f*, plate XLVIII, of our vase painting, we are reminded of Quetzalcoatl by the form of the beard. If the two glyphs, therefore, correspond to the periods indicated above, we should have here the revolution of Venus and the feast held in honor of the god who is identified with Venus, Quetzalcoatl-Ceacatl, the morning star, who appears and begins his course anew. This would then be the fundamental idea of our vase painting.

The above would be my explanation if I had only *f* and the two glyphs in question to take into consideration, and if I could be convinced of the exclusively astronomic purport of the manuscripts and of the myths of the Central Americans. But I think that all the personages, including *f*, exhibit so much realism and local color that we can not rest content with mere astronomy. This realism is likewise fully appreciated by Mr Förstemann.

A certain analogy existing between the first person in the picture given above in *a*, figure 133, and *f*, plate XLVIII, of the vase picture, might admit of another explanation. The Maya races in Guatemala, as I have already shown in an earlier essay,[a] were well acquainted with the Toltecs, the Yaqui-Vinak, and their god Quetzalcoatl. In the Popol Vuh the creative god is identified with Gucumatz, that is, Quetzalcoatl, and in one place he is actually called Ah-Toltecat, the Toltec. According to the traditions of the Guatemala tribes, as well as those of the Mayas of Yucatan, the ancestors of their races came from Tula, the city of the Toltecs. In a most valuable treatise upon the Toltec question Doctor Stoll[b] calls attention to the great part which traveling Nahuatl merchants and the great hordes of Nahuatl nationality which crowded into these southern regions as traders and colonists must doubtless have played in Central America. Is it not possible that the painting on our vase illustrates the appearance of one of these tribal hordes, represented by their deity, in the midst of the native Maya population? There is undoubtedly a certain contrast between the figures on the right and those on the left of the picture. The arrangement and bearing of the different figures in the two groups would seem entirely natural if we accept such a solution. Unfortunately, there is very little prospect of ever attaining positive knowledge in regard to questions of this sort. It is principally in Guatemala that we are very insufficiently or not at all informed respecting the local traditions and myths of the various tribes. Priests sent to Guatemala were forbidden by an absurd decree to teach Christianity to the Indians in their own language. Hence the priests took no interest in the language or in the traditions of the natives, and the later discovery of such interesting documents as the Popol Vuh can not wholly supply the absolute want of a medium of interpretation. Unfortunately, a Sahagun did not arise for the ancient races of Central America.

In concluding these remarks I will add a few observations concerning the other vessels from Chama which Mr Dieseldorff has described. It is particularly worthy of notice that at least four of the vessels—the one first discussed, the one with the bat god (Verhandlungen, 1894, plate XIII), and the two vessels shown in plate XVI, Verhandlungen, 1893—are proved by the style of the figures and glyphs, and especially by the pattern of decoration, to be allied to each other and evidently to have been made in the same place. The glyphs generally agree with the forms with which we are familiar in the Maya manuscripts and on the reliefs of Copan and Palenque without enabling us to connect them more closely with any one manuscript or relief. With regard to the figures, the god in the snail shell, occurring on two vessels, may at once be identified with the god who is regent of 7 Ahau in the Perez codex. I sent a drawing of this god to Mr Dieseldorff, which is reproduced in his first essay.[a] I would, however, remark that this god does not hold a skull in his hand, but the head of the god with the proliferous nose, the god of increase and abundant water, whom I think I can identify with Ah Bolon Tzacab. The god in the snail shell is the third in the series of 20 deities in the Dresden manuscript. He has no direct connection with the old god, D of Schellhas's nomenclature. This puts an end to the speculations in regard to the moon and the north. The relations of this old god to the moon are at least very doubtful.

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[a] Verhandlungen, 1894, p. 578.

[b] Guatemala. Reisen und Schilderungen aus den Jahren, 1878–1883, Leipzig, 1886, pp. 408 to 412.

A youthful god is represented on one of the two vessels, which are reproduced in volume 25 of the Verhandlungen, plate XVI. The glyphs between the two pictures of the god in the upper half of the decorated surface may be of value in determining this deity. These consist of two rectangles, each containing two day signs. The first one, which I have reproduced in *c*, figure 134, undoubtedly contains the signs ben and ix.[b] In the other, *d*, the lower character is with equal certainty meant for Caban, while the upper one is somewhat more uncertain, but in my opinion it may, with tolerable probability stand for Cib. Now, as Ben and Ix both precede the character Men, while Cib and Caban are the day signs immediately following it, it seems probable that the picture of the god between the two rectangles containing the glyphs is meant to represent or to express the sign Men, which is missing between the two pairs of day signs, as being a deity in some manner associated with it.

Two rectangles containing glyphs occur on the other vessel, that represented in plate XVI, which is decorated with the figure of the god in the snail shell. One rectangle, *f*, figure 134, contains the same signs Ben and Ix in reverse order. In the other, *e*, I think I recognize without a doubt the day sign Oc.

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[a] Verhandlungen, 1893, p. 379, fig. 9.

[b] Mr Dieseldorff originally read these ben-imix, or, with reference to the three dots in the second sign, Imox. After receiving a communication from me he accepted my reading, p. 376 of the Verhandlungen for 1894. But when he says there: "Ix, more correctly written hix ('jaguar')", I must observe that the Maya Ix corresponds to Iz or Itz of the Guatemalan tongue, and the latter means "magic", or "magician". In the latter sense it may take the prefix ah, the sign of the masculine gender, which gives us ah-itz, and in Maya, hix. But the latter is by no means necessary, and indeed we more frequently find the Maya character written Ix and Hix. The day sign Yiz, Ix, or Ah-Itz, Hix corresponds in Pipil to the character Teyolloquani ("the magician"). The latter word was undoubtedly allied in the old Indian conception to tequani, another word for Ocelotl ("jaguar"), the Mexican name for this day sign.

I am still doubtful about the upper character. But if we could assume that the same connection between the picture and the glyphs exists here that I have just proved to exist on the other vessel, we might read the upper character in *e* as Chuen, and we should then have in *d* Oc and Chuen, the two signs preceding Eb, in *f*, Ben and Ix, the two signs following Eb, and could therefore assume that the deity in the snail shell, who is twice repeated upon this vessel, is intended to represent or to express the day sign Eb. In that case we should have a very peculiar, hitherto unknown, form of the sign Chuen to deal with.

A third god is the bat god, who is also represented on two of the Dieseldorff vases. In an earlier article[a] I assembled what information I had at hand regarding this deity and pointed out that special veneration was paid to it in Guatemala, among other places. I had at that time only very cursorily seen the glyphs accompanying the picture of the bat god on the Dieseldorff vase. Opportunity now being afforded by the publication of the drawing to study them carefully, I still consider the same reserve to be wise on my part which Mr Dieseldorff maintains on his in regard to their interpretation. I will only remark that the picture of the bat, which is obvious in the glyph of the uinal Zotz and in the other glyphs reproduced there, does not appear here. If we designate the glyphs, as in plate XIII, volume 26 of the Verhandlungen, by the numbers 1 to 6 from above downward, then glyph 1 appears to me to be the principal one. It contains the cloud masses of the cauac sign, which also occur everywhere on the head of the bat in the glyphs on the Copan stelæ.[b] The second glyph may contain the skull of the character Cimi. The third seems allied to the sixth, and both seem to contain the character Kan. The fifth contains the character Imix, together with another element, which, combined with Imix, occurs in another glyph on page 61 of the Dresden manuscript. But I can offer no suggestion as to the actual meaning of all these glyphs.

Mr Dieseldorff has rendered to science a conspicuous service by his careful and expert excavations and by the publication of their results. Had there been the same careful and thorough researches made in many different localities of Mexico and Central America, we might decide with much more certainty the problems which now occupy us, and we should more clearly comprehend the early history of these interesting ancient races. May Mr Dieseldorff be enabled to continue his investigations and may equally active and equally successful workers come forward in other places to increase our knowledge.

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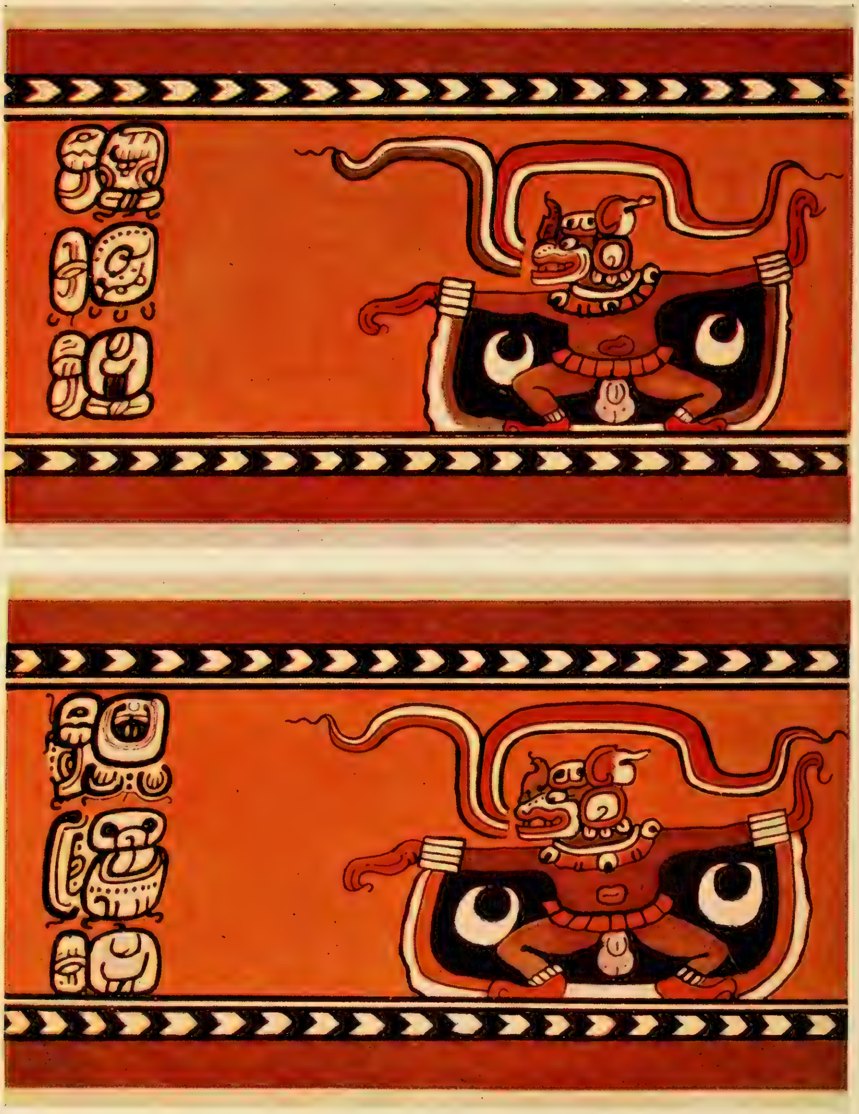
[a] Verhandlungen, v. 26, 1894, pp. 577 and following.

[b] Verhandlungen, v. 26, 1894, pp. 583, 584.



DESIGN ON A VASE FROM CHAMÁ

A CLAY VESSEL WITH A PICTURE OF A VAMPIRE-HEADED DEITY[a]

By E. P. Dieseldorff

The accompanying drawing of the vampire god (plate XLIX) occurs on a clay vessel which I found buried with a dead person on the summit of a temple mound in Chama, together with urn 2, discussed in Verhandlungen, 1893, page 549, where I described the spot where it was found.

The pot is cylindric in form, about 55 centimeters in circumference, measured around the outer edge, and 15 centimeters in height. It was broken into many pieces, and the polish and painting are greatly damaged. It is to be noted that reddish black, droplike spots occur all over the pot, as if some resinous fluid had been sprinkled over it with a brush. I have also observed similar spots on pots from the Zacapa region.

In order to form a characteristic image of the vampire god we must direct our attention to his dress and to similar representations on the monuments of ancient Maya civilization.

The first thing that strikes us is that he wears the collar of the death god, showing the three round balls, which also appear on the cloaklike wings, and which Dr Eduard Seler, no doubt correctly, assumes to be human eyes.

That an ornament of this kind should be given to the death god is entirely in keeping with the fact that the extinction of the eyesight in approaching dissolution is one of the most striking phenomena of death.

In the temple at Copan which bounds the western court on the north, on the east side of the inner entrance, was the representation of a battle between the vampire god and Cukulcan, the god of light, which I am inclined to regard as morning twilight, the struggle between darkness and light. On the basis of this, supported by the fact that the vampire leaves his hiding place at twilight, I regard the bands of breath that shoot from his mouth as a symbol of sunset and dawn. It seems to me certain that this does not mean wind, with which force of nature this god has no connection, although I know that his glyph often occurs with Ben-Ik, which combination, however, refers to all birds, beasts, and gods whose life and dwelling is supposed to be the air.

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[a] Ein Thongefäss mit Darstellung einer vampyrköpfigen Gottheit, Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte, pp. 576–577, published in Zeitschrift für Ethnologie, 1894, pt. 6.

We may therefore regard the vampire god as the servant of death, the ruler of twilight.

The god Cukulcan, ruler of air and light, and therefore of life, is represented in almost all the temple pictures and on the monoliths of Copan, sometimes with a human body, more frequently as a bird, also as a double snake. I will not at present enter more deeply into the reasons which have led me to this decision because the subject deserves treatment in a special paper.

The glyphs belonging to the picture on this vessel afford us no solution, since we do not understand them; the central glyphs of plate *a* probably denotes the vampire god, since the dots appearing on the forehead remind us of the representations at Copan, where they occur in a similar manner. The central glyph of plate *b* occurs in the Dresden codex, page 61, at the bottom.

I do not think that this clay vessel was prepared especially for burial, as I supposed in regard to the urns with a melon-shaped base. It seems to me rather to have served for religious purposes.

NOTES AND EMENDATIONS BY DR EDUARD SELER

Owing to the absence of Doctor Seler on an expedition to Mexico and Central America during the period in which his papers were going through the press, the proofs could not be placed in his hands. On his return to Berlin, however, he kindly consented to prepare the accompanying notes, in which are incorporated such corrections and additions as he deemed most important:

1 (page 22, line 4). My supposition that the Jesuit astronomer Don Carlos Siguenza y Góngora was the first who brought up the theory of an intercalation of thirteen days at the end of each period of fifty-two years was an erroneous one. The same opinion had been stated before him by Jacinto de la Serna, the author of Manual de Ministros de Indios, who, too, relied on former authorities. It is quite probable that these were the same as those consulted by Siguenza. Nevertheless I have not been able to find a trace of a similar explanation from the contemporaries of Father Sahagun and his immediate successors.

2 (page 34, line 3 from the bottom). I have lately changed my opinion in regard to the correspondence of colors and directions. I believe now that the correspondence given by Landa—that is to say, that yellow, red, white, and black represent, respectively, south, east, north, and west—was the generally accepted one, but that Landa did not connect in the right way the colors and their directions with the different years. He ascribed the colors and the directions to the years next following their respective years, because in the last five days of a certain year the u-uayeyab, or evil demon, of this year was taken to the plaza of the village, and, after certain performances had taken place over him, was thrown out of the village in the direction appropriated to the new year. Thus, for instance, the yellow demon of the south was set up in the last five days of the Cauac, or southern, years, and thrown out of the village in the direction east, appropriated to the new year, viz, the Kan year. The pages 30b and 29b, 31d and 30d of the Troano codex, adduced by me in support of the theory I presented in my former paper, admit a different explanation. On the other hand, the very name given by Landa as designating the Ekel Bacab, or black Bacab—Hozan ek—is a proof that this Bacab and his color are to be ascribed, as is done by Landa, to the western sky; for Hozan ek is the name of the evening star.

3 (page 35, line 6). In the later edition of this paper, reprinted in the first volume of my Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde, page 530, and in another paper published in the same volume, pages 367 to 389, I pointed out that not only the two signs of north and south, represented on pages 26 and 28 of the Dresden codex, but the whole lower parts of these two pages, with the signs of north and south they contain, must be changed.

4 (page 36, line 14 from the bottom). The name, correctly spelled Ah bolon tz'acab, occurs in corresponding places in the different books of the Chilam Balam.

5 (page 55, line 6). Brinton, in his Native Calendar, drew attention to the fact that the name of this sign with the Yucatecs, as well as with the different Guatemalan tribes, means "thunder storm", "thunder and lightning". In the Zapotec language "thunder and lightning" are rendered by the term làha quiepaa queça quiepaa, "fire on the sky, water on the sky", and the verb "it thunders" is given by ti api niça, ti api laa, "water comes down, fire comes down". It may be that this very api, "to come down", is to be supposed to be contained in the Zapotec name of the nineteenth day sign, Ape, Appe, Aape, Gappe. The turtle may be identified with the cloud or the thunder storm, because the carapace of the turtle was generally used as a drum. The thunder is the "big drum of the heavens."

6 (pages 68, line 10 from the bottom, and 117, line 5 from the bottom). As to the region to which the Vienna manuscript and the allied codices belong I have changed my opinion. I believe now that they originated in the territories bordering the Gulf coast, inhabited by the people that are designated in the Aztec manuscript of Father Sahagun as Olmeca Uixtotin Mixteca.

7 (pages 95, line 2, and 112, line 3 from the bottom). The comparison with the so-called relief tiles of Chiapas, preserved in the National Museum in the City of Mexico, ought not to be taken into consideration, as these relief tiles seem to be a fraud.

8 (pages 157, line 27). The element generally explained as giving the idea xocoyotl, "the younger", is the yacaxiuitl, "blue (or turquoise) nose ornament", the particular badge of the soul of the dead warrior, as it is represented, for example, by the mummy bundle built up at the time of the feast Tititl. (See Codex Magliabecchiano, page 72, XIII, 3, edited by the Duc de Loubat.) The hieroglyph giving the name Motecuhzoma xocoyotzin is in fact designative of the soul of the dead warrior or dead king, which may have been in some way identified by the Mexicans with the fire god. (See my Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde, 1904, volume 2, pages 731 to 738 and 742 to 745.)

9 (page 179, line 4). The figure in question is more correctly designated Tlauizcalpan Tecutli, "god of the morning star". (See my paper on the Venus Period in Picture Writings of the Borgian Codex Group, pages 355 and following.) Camaxtli, the war god of the Tlaxcaltecs, was, it seems to be beyond question, a very near relative of the god of the morning star, wearing the same color of the body and the same facial painting as the morning star.

10 (page 287, last line). The confrontation indicated in the text is not to be taken into consideration, as pages 1 and 2 of the Tonalamatl of the Aubin Collection seem to be a fabrication, attributable to Leon y Gama, the author of the well-known book Las Dos Piedras, or to one of his contemporaries.

11 (page 293, line 16). It has become a matter of doubt to me whether the words "corazon del pueblo" are in all cases to be identified with the Mexican Tepeyollotl. There might be applied to it the more simple meaning of "life of the sky" or "tribal god". As to the idol fetish of the town of Achiotla, the sculpture on its surface, described by Father Burgoa, points to the name Quetzalcoatl, who, it seems, ought not to be identified offhand with Tepeyollotl.

12 (page 312, line 28). I have of late become more doubtful regarding even the meaning and the origin of those compounds of radiant eyes, and am now inclined to retain for them the character of luminous objects in general and particularly of stars. Doctor Preuss has lately identified them with the butter-

fly as an image of fire. This is in a certain way proved by the particular form which these radiant eyes assume on certain monuments of Mexican construction. (See the account of the quauhxicalli, "dish for sacrificial blood", of the National Museum in the City of Mexico in my Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde, 1904, volume 2, page 811.) But here, too, the coincidence might be explained in a different way—that is to say, by the supposition that the Mexicans by this form tried to transform the star symbol, which, perhaps, was handed over to them by the astronomer-priests of the eastern tribes, into a symbol more in accordance with Mexican thought and Mexican pictorial style. As to the true meaning of these eyes and the faces by which in fragments II to XI of our Mitla wall paintings the eyes are replaced, it is an important fact that in fragment V the faces surrounded by eyes, which are seen looking down from the sky, are painted with the quincunx, the facial painting of the morning star. The interpretation I gave of the border of which these eye-surrounded luminous faces form part, viz, that this border represents the eastern sky, is proved by this to be true.

13 (page 342, line 2). The plain on which the houses of the village of Tepoxtlan are built is the bottom of a huge crater, the borders of which surround the plain on the north and south sides of the village.

14 (page 344, line 8). On my recent trip to Mexico, in October and November, 1904, I took the opportunity to visit Tepoxtlan, in order to make molds of the sculptures that adorn the walls of the cella. I there assured myself that the walls of the pyramid are plainly visible from the village site, being distinguished by their white color from the surrounding mountain crest.

15 (page 346, line 5). On visiting Tepoxtlan I saw that it is not a picture of the sun that is seen on the pillars walling the entrance to the cella, but the lower part of a huge glyph of the chalchiuitl, or green precious stone.

16 (page 366, line 20). I was mistaken in assuming that the day sign Cipactli, on page 25 of the Borgian codex, is placed beside the god C (figure 94), who, by the striped white body coloring and the deep black painting around the eyes, resembles Tlauizcalpan Tecutli, the divinity of the morning star. It escaped my notice, when I first brought together the material handled in this article, that on page 25 of the Borgian codex it is indicated by red lines in what manner the day signs are to be connected with their corresponding figures. By these red lines the sign Cipactli is appointed to the figure in the upper corner on the right hand, who, by his long beard and general appearance, resembles the god E (figure 94). This god is consequently to be considered as the representative of the east, and the figure resembling Tlauizcalpan Tecutli, the divinity of the morning star, corresponds to the north. The latter figure is, in fact, not the morning star represented in a special rôle. It is an image of Mixcuatl, the god of the chase, the god of the Chichimecs, who is not identical, it is true, with the morning star, but must be regarded as very nearly related to him. I explained this more in detail in the revision of this article, published in my Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde, 1902, volume 1, pages 618 to 667, and in the first volume of my interpretation of the Borgian codex, 1904, pages 259 to 265.

17 (page 367, line 15). As I pointed out in the foregoing note, the god with the heavy beard and eyebrows and the bicolored, half red, half black, face painting, must be regarded as the lord of the first division, or the east; Xipe Totec, consequently, as the lord of the third division, or the west, and Tlaloc as the lord of the fourth division, or the south.

18 (page 369, line 8). As to this point, too, I came recently to another interpretation. I believe now—and I explained these figures in this way in

volume 1 of my interpretation of the Borgian codex—that the first two rows of divinities are constructed with regard to the planet Venus as morning star, and consequently refer to the east; but that the two latter rows are constructed with regard to the evening star, and refer to the west. The east is the region of the warriors, that is, of the sacrificed; the west, that of the women. In the first two regions we have, therefore, representations of sacrifice; in the latter two, representations referring to childbirth and nursing. The tearing out of the yellow stripe ending in flowers and precious stones I am inclined to consider now as a figurative expression of childbirth, since it is very common in Mexican figurative speech to allude to a newly born child by the names of precious feathers or precious stones.

19 (page 369, last line). In conformity with the view expressed in the foregoing note, I am now inclined to accept the nursing of the female deities simply as that which it is, i. e., the nursing of a child.

20 (page 371, line 25). I repeat that *b* and *d*, figure 95, as well as *c* and *d*, figure 94, represent not the morning star himself but the morning star in his special rôle of hunting god and war god; that is to say, the god Mixcuatl, or Camaxtli.

21 (page 389, line 25). I am now inclined to assume another correspondence of these five spear-throwing gods with the five directions, supposing that each of these divinities was allotted to the quarter just opposite to that where lives the demon at whom he throws the spear. On this supposition, the black god would occupy the region of the west, throwing his spear at the god of festivity in the east; this black god, consequently, would correspond to the god Xipe of page 25 of the Borgian codex. The red rain god of the second period, throwing his spear at the jaguar in the north, would then own the region of the south and correspond to the rain god of the Borgian codex. The god with the animal face, who throws his spear at the maize god, that is, to the west, must correspondingly belong to the east and be identified with the god with the heavy beard and eyebrows and the bicolored, half red, half black, face who stands in the upper right corner of the page in the Borgian codex. And the warrior with the face painting resembling that of the Mexican Tezcatlipoca, who throws his spear at the sun-bearer, the turtle, the symbol of the kings, must correspond to the Chichimec god Mixcuatl of the Borgian codex, god of the north. The fifth and last divinity is the god with the beady eyes, who, I said, must symbolize the lower region, or the earth. He throws his spear at the warrior, that is, the inhabitants of the upper world, of the heavens, where the dead warriors go (see my interpretation of the Borgian codex, 1904, volume 1, pages 327 to 336).

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